Class AE5

Book U47

Copyright No.

COPYRIGHT DEPOSIT.

LIZARD, BEETLE, HORNED VIPER

THE UNITED EDITORS PERPETUAL ENCYCLOPEDIA

A LIBRARY OF UNIVERSAL KNOWLEDGE

COMBINED WITH AN

UNABRIDGED DICTIONARY

OF THE

ENGLISH LANGUAGE

MANAGING EDITOR

GEORGE EDWIN RINES

ASSISTED BY MORE THAN FIVE HUNDRED OF THE MOST EMINENT SCHOLARS AND SPECIALISTS

THIRTY VOLUMES

ILLUSTRATED

UNITED EDITORS ASSOCIATION

NEW YORK—CHICAGO

MDCCCCXI

AE5
U47

Copyright, 1909
by
The United Editors Association

Copyright, 1911
by
The United Editors Association

©Cl.A297620

SCHEME OF SOUND SYMBOLS

FOR THE PRONUNCIATION OF WORDS.

Note.—(-) is the mark dividing words respelt phonetically into syllables; (′), the accent indicating on which syllable or syllables the accent or stress of the voice is to be placed.

Sound-symbols employed in Respelling.	Representing the Sounds as exemplified in the Words.	Words respelt with Sound-symbols and Marks for Pronunciation.
ā	mate, fate, fail, aye	*māt, fāt, fāl, ā.*
ă	mat, fat	*măt, făt.*
â	far, calm, father	*fâr, kâm, fâ′thėr.*
ä	care, fair	*cär, fär.*
aw	fall, laud, law	*fawl, lawd, law.*
ē	mete, meat, feet, free	*mēt, mēt, fēt, frē.*
ĕ	met, bed	*mĕt, bĕd.*
ė	her, stir, heard, cur	*hėr, stėr, hėrd, kėr.*
ī	pine, ply, height	*pīn, plī, hīt.*
ĭ	pin, nymph, ability	*pĭn, nĭmf, ă-bĭl′ĭ-tĭ.*
ō	note, toll, soul	*nōt, tōl, sōl.*
ŏ	not, plot	*nŏt, plŏt.*
ô	move, smooth	*môv, smôth.*
ō	Goethe (similar to *e* in her)	*gō′tėh.*
ow	noun, bough, cow	*nown, bow, kow.*
oy	boy, boil	*boy, boyl.*
ū	pure, dew, few	*pūr, dū, fū.*
ŭ	bud, come, tough	*bŭd, kŭm, tŭf.*
û	full, push, good	*fûl, pûsh, gûd.*
ü	French plume, Scotch guid	*plüm, güd.*
ch	chair, match	*chär, măch.*
ċh	German buch, Heidelberg, Scotch loch (guttural)	*bôċh, hī′dėl-bĕrċh, lŏċh.*
g	game, go, gun	*gām, gō, gŭn.*
j	judge, gem, gin	*jŭj, jĕm, jĭn.*
k	king, cat, cot, cut	*kĭng, kăt, kŏt, kŭt.*
s	sit, scene, cell, city, cypress	*sĭt, sēn, sĕl, sĭt′ĭ, sī′prĕs.*
sh	shun, ambition	*shŭn, ăm-bĭsh′ŭn.*
th	thing, breath	*thĭng, brĕth.*
ṫh	though, breathe	*thō, brēṫh.*
z	zeal, maze, muse	*zēl, māz, mūz.*
zh	azure, vision	*ăzh′ėr, vĭzh′ŭn.*

LIGURIAN REPUB'LIC, *lī-gū'rĭ-an:* the name given to the republic of Genoa 1797, when, in consequence of the conquests of Bonaparte in Italy, it was obliged to exchange its aristocratic for a democratic constitution: see GENOA. The name was chosen because the Genoese territory formed the principal part of ancient Liguria, which in the time of Augustus extended from the Ligurian Sea to the Po in the n., and from the Macra in the e. to the Varus in the w. Long previously, however, Liguria had been a much larger territory, stretching far into Gaul—forming indeed the nucleus of the Roman province of Gaul. The Ligurians became subject to Rome about B.C. 125.

LIGURITE, n. *lĭg'ū-rīt* [from *Ligu'rĭă*, in Italy, where found]: a variety of sphene, a mineral of an apple-green color, considered superior as a gem to chrysolite in color, hardness, and transparency.

LI HUNG-CHANG, *lē hûng-châng:* statesman: b. Ho-Fei-Shienn, province of Ann-Houei, China, 1823, Feb. 16; d. Peking, 1901, Nov. 7. He was educated in the Han-Sin College, Peking; held several civil and military offices; was appointed governor of the province of Thiang-Sin 1862; aided in suppressing the Taeping insurrection 1863-4; became viceroy of the two Thiang provinces 1865; minister-plenipotentiary 1866; viceroy of Hong-Kuang 1867; grand chancellor 1868; was despoiled of his titles after the Tien-Tsin massacre 1870; restored to imperial favor and made grand chancellor 1872; and was subsequently appointed governor-general of Pi-Chih-Li and commander-in-chief of the Chinese army. In 1877 he foresaw the need of a formidable navy for China, and bought 4 ironclads built in England; from this the Chinese navy took its start. In 1888 he began to apply himself to the enterprise of railroad building in his own country, and the practical wisdom with which he proceeded soon enlisted sufficient capital to carry out his plans. About the same time joint-stock companies were organized, through the influence of Li Hung-Chang, for various industrial enterprises, such as silk, cotton, woolen, glass, and iron manufactures, and under his direction Chinese capitalists studied and practiced the methods of western finance as applied to industry. In 1894 he used his efforts to avert war with Japan over Korean relations, but his advice was not heeded, until China, reduced to dire extremity by the war, turned as usual to him and sent him to make a peace, which delicate and dangerous mission he executed with tact and success. In recognition of his services in this instance the emperor reinstated him in offices and dignities of which he had been deprived. Li Hung-Chang royally entertained Gen. Grant when the latter made his tour of the world, and in 1896 he himself made a tour through Europe and America, and was received with distinguished honors by the peoples and their governments.

LIKE, a. *līk* [from the terminations, Goth. *leiks;* Icel. *líkr;* Dan. *lig;* Gr. *likos;* L. *lis;* Ger. *lich,* used to indicate the nature, form, or appearance of a thing: AS. *gelic;* Ger. *gleich,* like]: similar; resembling; equal; of same or nearly same extent; likely; in a state that gives probable expectations: N. some person or thing resembling another: AD. in the same manner as; in such a manner as befits; probably. LIKEABLE, a. *līk'ă-bl,* that can be liked; pleasing to, from manners and disposition. LIKELY, a. *līk'lī,* probable; that may be thought more reasonable than the contrary; suitable; such as may be liked; pleasing; promising: AD. probably. LIKE'LINESS, n. *-nĕs,* or LIKE'LIHOOD, n. *-hûd,* probability; appearance of truth. LIKENESS, n. *līk'nĕs,* resemblance; a portrait; one who resembles another; a copy; form. LIKE-MINDED, of the same mind.—SYN. of 'likeness': similarity; similitude; parallel; effigy; representation.

LIKE, v. *līk* [Norw. *lika;* Lap. *likot,* to be to one's taste: Goth. *leikan,* to please: mid. H.Ger. *líchen,* to be like: AS. *gelician,* to please, to delight]: to be pleased with; to approve; to choose; in *OE.,* to liken; to please; to be pleased. LI'KING, imp. being pleased with: ADJ. in *OE.,* plump: N. inclination; preference; desire; delight in; in *OE.,* good state of body; plumpness. LIKED, pp. *līkt.* LIKES AND DISLIKES, feelings of attachment and aversion.

LIKEN, v. *līk'n* [Sw. *likna,* to resemble, to liken: Eng. *like,* similar (see LIKE 1)]: to consider as similar; to compare; to represent as having resemblance. LIKENING, imp. *līk'n-ĭng.* LIKENED, pp. *līk'nd.*

LIKEWISE, ad. *līk'wīz* [*like,* and *wise* (see LIKE 1)]: in like manner; moreover; also.

LILAC, n. *lī'lăk* [Sp. *lilac;* Turk. *leilaq;* F. *lilas,* the lilac: comp. Gael. *liath,* pale in color]: a flowering shrub; the *Syringa vulgāris,* or common lilac: ADJ. of a purple color like the lilac. LILACINE, n. *lī'lă-sĭn,* a principle in the bark which renders it a febrifuge.—The *Lilac* is a genus of nat. ord. *Oleaceæ,* and consisting of shrubs and small trees, with 4-cleft corolla, 2 stamens, and a 2-celled, 2-valvular capsule. The COMMON LILAC (*S. Vulgaris*) is one of the most common ornamental shrubs cultivated in Europe and N. America. It is a native of n. Persia, and was brought first to Vienna by Busbecq, ambassador of Ferdinand I., to whom is due also the introduction of the tulip into European gardens. From Vienna it soon spread, so that it is now found half wild in the hedges of some parts of Europe, There are many varieties. The flowers grow in large conical panicles; are of a bluish 'lilac' color, purple or white, and have a delicious odor. The leaves are a favorite food of cantharides. The bitter extract of the unripe capsules has very marked tonic and febrifugal properties. The wood is fine-grained, and used for in-

laying, turning, and the making of small articles: a fragrant oil can be obtained from it by distillation. The Chinese Lilac (*S. Chinensis*) has larger flowers, but with less powerful odor, and the Persian Lilac (*S. Persica*) has narrower leaves. Both are often planted in gardens and pleasure-grounds. There are several other species.

LILIACEÆ, *lĭl-ĭ-ā'sē-ē:* natural order of endogenous plants, containing about 1,200 known species; most numerous in warmer parts of the temperate zones. They are mostly herbaceous plants, with bulbous or tuberous, sometimes fibrous roots; rarely shrubs or trees. The shrubby and arborescent species are mostly tropical. The stem is simple, or branching toward the top, leafless or leafy. The leaves are simple, generally narrow, sometimes cylindrical, sometimes fistular. The flowers are generally large, with 6-cleft or 6-toothed perianth; and grow singly, or in spikes, racemes, umbels, heads, or panicles. The stamens are six, opposite to the segments of the perianth; the pistil has a superior 3-celled, many-seeded ovary, and a single style. The fruit is succulent or capsular; the seeds packed one upon another in two rows. This order contains many of the finest garden, greenhouse, and hothouse flowers, as lilies, tulips, dog's-tooth violet, lily of the valley, tuberose, crown imperial, and other fritillaries, hyacinths, *Gloriosa superba:* many species useful for food, as garlic, onion, leek, and other species of *Allium*, asparagus, the Quamash or Biscuit Root (*Camassia esculenta*) of N. America, the Ti (*Dracæna terminalis* or *Cordyline Ti*) of the South Seas, etc.; many species valuable in medicine, as squill, aloes, etc.; and some valuable for the fibre which their leaves yield, as New Zealand Flax, and the species of Bowstring Hemp or *Sanseviera.*—This nat. ord. has been the subject of a number of splendid works, particularly Redouté's *Les Liliacées* (8 vols. Paris 1802-16).

LIL'IENTHAL, Max: American rabbi: b. Munich, Bavaria, 1815, Nov. 15; d. Cincinnati, Ohio, 1882, Apr. 5. Graduating from the university of his birthplace, he was called to the directorship of a Hebrew school in Riga, Russia, and at government expense traveled through the 17 western provinces of Russia to encourage the Jews to make educational reforms. In 1842 this mission was ended, and until 1845 he remained in St. Petersburg, perfecting his educational system, when the Czar Nicholas issuing orders which aimed at the conversion of the Jews to the Greek Church, he emigrated to America. On his arrival in 1844 he was made rabbi of three synagogues, but in 1850 resigned to establish a school. In 1855 he accepted a call as rabbi of the B'nai Israel Congregation of Cincinnati, a position he held until his death. He was foremost in civil and educational reform, an active member of the board of education, and a director of the Cincinnati University. He

was prominent in the councils of the Free Religion Associations, and always championed the cause of progressive Indians with his voice and pen. He aided largely in the establishing of the Hebrew Union College, and as an orator did much in his addresses in churches and on the public platform to promote social and religious reform.

LILITH, n. *lĭl'ĭth* [Heb. *lilith*, properly the nightly one, the name of a female night-spirit that was believed to wander in the deserts and was represented as making its permanent abode in Edom]: according to Talmudic legend, Adam's first wife, who for refractory conduct was transformed into a demon, and had power to injure and destroy infants unprotected by the necessary amulet.

LILIUOKALANI, *lĭ-li-ô-ō-kâ-lânĭ*, Lydia Kamekeha: former queen of the Hawaiian islands; born Honolulu, 1838, Dec. 2. She was married to an American, John Dominis, who was governor of Oahul; when the king left Hawaii, he was appointed vice-regent, and on his death she was proclaimed queen. Her husband died shortly after she ascended the throne. She attempted to force her cabinet to adopt a new constitution, which would practically have abolished representative government and established an absolute monarchy. Though she did not succeed in this attempt, popular feeling was roused against her, and she was deposed in 1893 and a provisional government set up. President Cleveland opposed the American minister's attitude toward the revolution, and endeavored to have her restored to power. He was unsuccessful in this, however, and when the Hawaiian republic was established, Liliuokalani came to the United States. After the annexation of the islands, she returned to Honolulu, where she has since resided.

LILLE, *lēl*, France: an important town, capital of the department of the Nord and chief fortress of the n., 127 m. n. of Paris, and 7 m. from the frontier of Belgium. The former capital of French Flanders, it was fortified as early as 1007. It is well built, and has spacious, regular streets, lined with large, massive houses. In the n.w. of the town stands the citadel, a masterpiece of Vauban. New fortifications include a circle of detached forts. Among the churches are: St. Maurice, in the flamboyant style, recently restored; Notre Dame de la Treille, in 13th century Gothic; St. Catherine; the Madelaine; and the Protestant Church. Among secular buildings are the Hôtel de Ville, with rich collections of pictures, drawings, etc.; the exchange (1652); the prefecture; the palace of justice; the arsenal; the Paris Gate, a triumphal arch in honor of Louis XIV.; the general hospital; the theatre; and the concert-hall. Lille possesses a state university with four 'faculties,' a Roman Catholic university, lyceum, communal college, school of art, conservatory of music, public library of 100,000 volumes, botanic garden, zoological

garden, etc. The industries include cotton spinning and weaving, fine linen thread, linen and cotton twist, broadcloth, beet-sugar (raw and refined), soap, oil, ribbons, tulles, tobacco-factories, engine-works, foundries, dye-works, bleach-fields, breweries and distilleries. Its situation on the frontier and extensive railway and water communication, make Lille a great entrepôt of trade. Lille was named from the castle around which the town originally arose, and which from its position in the midst of marshes was called Isla. It was founded 1007 by Baldwin, fourth Count of Flanders, and has suffered greatly from frequent sieges. Of these, the most recent, perhaps the most severe, were in 1708 and 92. On the former occasion, during the war of the Spanish Succession, the garrison capitulated to the allies, after a bombardment of 120 days; on the latter, the Austrians, after a terrific bombardment, were obliged to raise the siege. Pop. (1901) 210,696.

LILLEY, *lĭl'ĭ*, ROBERT: scholar, traveller, and editor; b. Greenock, Scotland, 1839, Aug. 24. Educated at the Academy in his native place, and engaged for some time as a teacher; went to China in 1867, where he mastered the language, both written and spoken, and spent several years in travelling through the interior of that country and in Manchuria, and in studying its history, literature, religions, etc.; changed his residence to Japan in 1875, and travelled throughout that country, acquiring the language and identifying himself with the spread of sound literature; he also introduced the system of printing for the blind now in use in Japan, and published a Kunten edition of Faber's *Mako Kògi* and other works; removed to the United States and settled in the city of New York, 1881, where he became one of the editors of the *Century Dictionary;* he was also managing editor of the *Universal Cyclopedia* (1892-1900); edited *Oriental Ceramic Art,* text by Bushell of Peking (1895-97); edited *Investigations and Studies in Jade* (based on the collections of Heber R. Bishop, issued privately in 1906), and the descriptive *Catalogue* of the same (1898-1901); and contributed a series of articles on Oriental subjects to the *New International Encyclopedia* (1902-3).

LILLIE, *lĭl'ĭ*, ARTHUR: English author. He went to India and served in the Bengal infantry 1847-63. He has published: *Out of the Meshes,* a novel (1869); *Buddha and Early Buddhism* (1881); *Buddhism in Christendom* (1887); *The Influence of Buddhism on Primitive Christianity* (1893); *Madam Blavatsky and her Theosophy* (1895); *Buddha and Buddhism* (1900); etc.

LILLIE, LUCY CECIL WHITE: American writer of juvenile and other books: b. New York 1855. Among her many works are: *Prudence,* a novel (1882); *Rolf House* (1886); *The Colonel's Money* (1888); *The Squire's*

Daughter (1891); *Alison's Adventures* (1895); *Honest Endeavor; Kenyon's Wife; Margaret Thorpe's Trial; Millbrook Library; Phil and the Baby;* etc.

LILLIPUTIAN, n. *lĭl'lĭ-pū'shăn* [*Lilliput,* fabled country described by Swift in *Gulliver's Travels,* of which the inhabitants are not greater in size than an ordinary man's finger]: a dwarf; any very diminutive person or thing: ADJ. very diminutive.

LILLO, *lĭl'ō,* GEORGE: English dramatist: b. London 1693, Feb. 4; d. there 1739, Sep. 3. The son of a Dutch jeweler, he was brought up to his father's trade, and was for several years in partnership with him. *Silvia, or the Country Burial* (1730), a ballad opera, was his first piece; and was followed (1731) by the famous *London Merchant, or the History of George Barnwell,* nowadays better known by its sub-title, which made its author famous, and held the stage for nearly a century. It had a marked influence in its day, and may be regarded as a precursor of the 'domestic drama.' His other dramatic productions include: *Britannia, or the Royal Lovers* (1734); *Fatal Curiosity* (1736); *Arden of Feversham,* an adaptation of an Elizabethan play, revised or completed by John Hoadly, after Lillo's death.

LIL'LY, JOHN. See LYLY.

LILLY, *lĭl'ĭ,* WILLIAM: 1602-1681, June 9; b. Diseworth, Leicestershire; English astrologer. While young, he betook himself to the study of astrology, particularly the *Ars Notoria* of Cornelius Agrippa, and soon acquired fame as a caster of nativities, and a predictor of future events. From 1644 till his death, he annually issued his *Merlinus Anglicus Junior,* containing vaticinations, to which much importance was attached by many. In the civil war, he attached himself to the parliamentary party, and was actually sent 1648, with another astrologer, to the camp at Colchester, to encourage the troops, which service he performed so well that he received a pension for it, which, however, he retained only two years. After the Restoration, he was imprisoned, on the supposition that he was acquainted with the secrets of the republicans; but being set free, he retired to the country. He was again apprehended on suspicion of knowing something of the causes of the great fire of London 1666. The king of Sweden sent him a gold chain and medal in 1659 in recognition of a favorable horoscope cast for him a short time before. He published many works, and was frequently engaged in controversy. His chief writings are: *Christian Astrology, modestly treated in Three Books* (1647), reprinted in 1852 by Zadkiel as *An Introduction to Astrology; An Astrological Prediction of the Occurrences in England for the Years 1648, 1649, 1650* (1648); *Monarchy and No Monarchy* (1651); *True History of King James I. and King Charles I.* (1651); *Annus Tenebrosus* (1652); *Anima Astrologiæ*

(1676); and *Catastrophe Mundi* (1683). Butler satirizes Lilly in Hudibras under the name of Sidrophel. His autobiography was published in 1715.

LILLY, William Samuel, M.A.: English controversial writer: b. Fifehead, Dorsetshire, 1840, July 10. He was educated at Cambridge and has been secretary to the Catholic Union of Great Britain from 1874. He is a champion of the Roman Catholic point of view in such works as *Ancient Religion and Modern Thought* (1884); and *The Claims of Christianity* (1894). Other works of his are: *A Century of Revolution* (1899); *First Principles in Politics* (1899); *Essays and Speeches* (1897); *A Year of Life* (1900); *Renaissance Types* (1901); *India and Its Problems* (1902); *Christianity and Modern Civilization* (1903); *Studies in Religion and Literature* (1904); etc.

LILT, v. *lĭlt* [Russ. *liôlka*, a cradle: Esthon, *laul*, a song: Ger. *lallen*, to sing without words: comp. Gael. *luailtc*, speed, haste (see Lull)]: as a prov. Eng. word, to do a thing with dexterity or quickness; in *Scot.*, to sing cheerfully and merrily; to do with spirit and gayety: N. a cheerful air; a lay or song. Lilt'ing, imp. Lilt'ed, pp. *-ĕd*.

LILY, n. *lĭl'ĭ* [L. *lilĭŭm*, a lily]: beautiful flowering plant of many species, having a bulbous root. Liliaceous, a. *lĭl'ĭ-ā'shŭs* [F. *liliace*—from mid. L. *liliācĕus*]: pertaining to lilies, or resembling them. Lily-handed, having hands white and pure as the lily. Lily-white, white as the petals of a lily. Lily-stone, and Lily-encrinite, familiar terms for the common encrinite of geologists, from the fanciful resemblance of its stalk and clustered tentacles to the stem and flower of a lily.

LIL'Y: genus of plants of nat. ord. *Liliaccæ*, containing a number of species much prized for the size and beauty of their flowers. The perianth is bell-shaped, and its segments are often bent back at the extremity. The root is a scaly bulb, the stem herbaceous and simple, often several ft. high, bearing flowers near its summit. —The White Lily (*L. candidum*), native of the Levant, has been long cultivated in gardens, and much sung by poets. It has large, erect, pure white flowers, as much prized for fragrance as for beauty.—The Orange Lily (*L. bulbiferum*), native of s. Europe, with large, erect, orange-colored flowers, is a well-known and very showy ornament of flower-gardens.—The Martagon or Turk's Cup Lily (*L. Martagon*), native of s. Europe, and allied species with verticillate leaves and drooping flowers, also are common in gardens. The Tiger Lily (*L. tigrinum*) is a native of China, remarkable for the axillary buds on the stem; and some fine species are natives of N. America, as *L. superbum*, which grows in marshes in the United States, has a stem 6-8 ft. high, and reflexed orange flowers, spotted with black; *L. Canadense*, etc.

Several very fine species have been introduced from Japan, as *L. Japonicum*, *L. speciosum*, and *L. lancifolium*. —The bulbs of *L. Pomponium*, *L. Martagon*, and *L. Kamtschacense*, are roasted and eaten in Siberia. That of *L. candidum* loses its acridity by drying, roasting, or boiling; when cooked, it is viscid, pulpy, and sugary, and is eaten in parts of the East.—Lilies are propagated generally by offset bulbs. A single scale of the bulb, or even part of a scale, will however suffice to produce a new plant, of which skilful gardeners avail themselves.

LIL'Y, GIGANTIC (*Doryanthes excelsa*), of Australia: plant of nat. ord. *Amaryllideæ*, with flowering stem 10 or 14, sometimes 20 ft. high, bearing at top a cluster of large crimson blossoms. The stem is leafy, but the largest leaves are near the root. This plant is found both on the mountains and on the sea-coast of New South Wales. It is of splendid beauty. The fibre of its leaves has been found excellent for ropes and for textile fabrics.

LILYBÆ'UM. See MARSALA.

LILY OF THE VALLEY (*Convallaria*): genus of plants of nat. ord. *Liliaceæ*, having terminal racemes of flowers; a white, bell-shaped, or tubular 6-cleft or 6-toothed perianth; a 3-celled germen, with two ovules in each cell, and a succulent fruit.—The species commonly known as the Lily of the Valley (*C. majalis*), the *Maiblume* or Mayflower of the Germans, grows in bushy places and woods in Europe, n. Asia, and N. America, and has a leafless scape, with a raceme of small flowers turned to one side. It is a universal favorite, for its pure and modest beauty, its fragrance, and the early season of its bloom. It is therefore very often cultivated in gardens, and *forced* to earlier flowering in hothouses. Varieties are in cultivation with red, variegated, and double flowers. The berries, the root, and the flowers have a nauseous, bitter, somewhat acrid taste, and purgative and diuretic effects. The smell of the flowers in large quantity, and in a close apartment, is narcotic. Dried and powdered, they become a sternutatory. The esteemed *Eau d'or* of the French is distilled from the flowers.—Allied to Lily of the Valley is SOLOMON'S SEAL (q.v.).

LIMA, *lī'ma:* city, cap. of Allen co., O.; on Ottawa river, and on the Lake Erie & W., the Cincinnati, Hamilton & Dayton, the Erie, the Penn., and the Detroit Southern railroads; 71 m. n. of Dayton, 91 m. s.w. of Sandusky. It is situated in a petroleum and natural gas belt, and is one of the important shipping points for petroleum. There are also a number of manufacturing establishments, employing over 2,000. Furniture and tools are manufactured, and there are foundries and flour mills. Lima has excellent schools, including a high school and a business school; and it is also the seat of

LILLIES OF THE VALLEY.

Lima College founded by the Lutherans in 1893. The city owns and operates the waterworks. Pop. (1900) 21,723; (1910) 30,508.

LIMA, *lē'mâ:* capital of the republic of Peru, and of the dept. and province of Lima; on the river Rimac (of whose name its own is a corruption), about 6 m. from its mouth and from its port on the Pacific, Callao, with which it is connected by railway; lat. 12°2′ s., long. 77°7′ w. The climate is moist but not unhealthful; the rainfall is very little, and the temperature not excessive in its variations, having for its mean through the year about 73° F. Summer begins in Dec., winter in June. The city is regularly laid out, with wide streets, and houses spacious though not lofty, and built usually around an open court or yard. The principal buildings are the cathedral, of stone with broad façade and two lofty towers, the archbishop's palace, government house, and municipal office. There are also 67 churches and chapels, and many monasteries and convents. The largest church is that of San Pedro (1598) with 17 altars. The national university, chartered in 1551, is the oldest in America. There are more than 100 elementary schools, several technical schools, professional, classical, naval and military, besides a number of small private schools, a national public library of more than 40,000 vols., many charitable institutions, and an amphitheatre for bull-fights accommodating 9,000 spectators. There is a marble statue of Columbus unveiling America, and a famous bronze equestrian statue of Simon Bolivar, 11 tons in weight. Lima has few industries, but it is a great trading centre: the imports and exports together exceed $25,000,000 annually. Lima was founded 1535 by Pizarro. It has had vicissitudes of conflagration, capture in war, and repeated earthquakes. Pop. over 116,000.

LI'MA BEAN (*Phaseolus lunatus*): one of the most popular beans in cultivation. The seeds are large and flat and of a dull white shade. It is used for the table in either a green or ripe state. The plant is tender and does not mature seed in the extreme northern portions of the United States. There are several varieties, some of which are smaller and mature earlier than the Large White. The Lima Bean requires rich, deep soil. Planting must not be done until the ground is dry and danger of frost is over. Poles five to eight ft. in length are to be firmly set, and the earth drawn around them in the form of small mounds in which to place the seeds. Four or five seeds should be planted, with the eyes downward, around each pole. When they are well started, they should be thinned to two plants. The runners are to be twined around the poles in the opposite direction from the movement of the sun. Wire netting is used by some gardeners instead of poles, and is said to have some advantages. Frequent hoeing is desirable to pro-

mote the growth of the plants, as well as to keep the ground free from weeds.

LIMACIOUS, a. *lī-mā'shŭs* [L. *limax* or *limācem*, a slug, a snail: F. *limace*]: of or resembling the slug or naked snail. LIMAX, n. *lī'măks*, a genus of air-breathing mollusks without shells; the slug or snail (see SLUG). LIMAC'IDÆ. See SLUG.

LIMA WOOD, *lē'mâ wûd:* name of the dye-wood called also Pernambuco Wood, Nicaragua Wood, and Peach Wood, the heart-wood of *Cæsalpinia echinata:* see BRAZIL WOOD. It is extensively used for dyeing red and peach-color.

LIMB, n. *lĭm* [AS. *lim*, a limb: Icel. *limr*, a branch, a limb: Dan. *lime*, a twig: comp. Gael. *lamh*, an arm or hand]: the part of an animal jointed, as it were, to the body, as an arm or a leg; a large branch of a tree; in *bot.*, the blade of the leaf; the broad part of a sepal or petal: V. to supply with limbs; to dismember. LIMB'ING, imp. LIMBED, pp. *līmd:* ADJ. having limbs. LIMB'LESS, a. *-lĕs*, without limbs. LIMB-MEAL, *lĭm'mēl*, in pieces; piece-meal.

LIMB, n. *lĭm* [L. *limbus*, a border that surrounds anything: It. *lembo*, skirt, border]: the border or edge of the disk of a heavenly body, particularly of the sun or the moon; the edge of a graduated circle in an instrument for measuring angles; a theodolite has two limbs—one for horizontal, one for vertical angles. The term limb is often applied also to the graduated staff of a levelling-rod.

LIMBAT, n. *lĭm'băt:* a name in the island of Cyprus applied to a cooling wind, blowing from 8 A.M. till midday or later; the local sea-breeze.

LIMBEC, n. *lĭm'bĕk:* OE. for ALEMBIC, which see.

LIMBER, n. *lĭm'bėr* [Icel. *limar*, boughs; *lim*, foliage: OF. *liamen*, a tie, a packet—from L. *ligāmen*, a bandage, a tie: F. *limon*, a shaft]: half the field-equipage of a cannon or howitzer. The one half consists of the carriage itself, with the gun; while the limber, a two-wheeled carriage, fitted with boxes for the field-ammunition of the piece, and having shafts to which the horses are harnessed, forms the remainder. At the back-part, the limber has a strong hook, to which, on the march, is attached the foot of the gun-carriage by a ring at *h* (see figure, GUN-CARRIAGE). This constitutes at once a four-wheeled frame, which, while easier for transport than a gun on two wheels only, has the advantage of keeping together the gun and its ammunition. In marching, the gun points to the rear; but in coming to action, the artillerymen, by a rapid evolution, wheel around, so that the gun points to the front. It is then *unlimbered*, or unhooked, and the limber conveyed far enough to the rear to be out of the way of the men working the piece.

To *limber up* again, and retreat or pursue, is the work of a few moments.—Limber denotes also the rollers laid under a boat when it is drawn up on the beach. LIMBER, v. *lĭm'ber*, to attach a cannon to the limber. LIM'BERING, imp. LIMBERED, pp. *lĭm'bėrd*. TO UNLIMBER, to detach from the limber. *Note.*—LIMMERS is the older spelling of LIMBERS, and *b* is intrusive.

LIMBER, a. *lĭm'bėr* [Swiss, *lampen*, to hang loose: Icel. *limpiaz*, to faint, to become slack (see LIMP 2)]: not having strength to stand stiff; flexible; supple; pliant; easily bent.

LIMBO, n. *lĭm'bō* [L. *lĭmbus*, a hem or edge: It. *lembo*, the skirt of a garment, the hem or border; *limbo*, limbo]: see LIMBUS. IN LIMBO, in prison; under restraint.

LIMBURG, *lĭm'bŭrch*, F. *lăng-bôr':* old province of Belgium, which, after having formed part of Belgium, France, Holland, and Austria, was, 1839, divided between Belgium and Holland.—BELGIUM LIMBURG, or LIMBOURG, in the n.e. of the kingdom, is separated from Holland by the Meuse up to lat. 51° 9′ n., thence by a line running e.n.e. to the n. boundary of the kingdom: 928 Eng. sq. miles; cap. Hasselt. The surface of the province is flat, and a large portion is occupied by barren heath; but in the s. and centre there is good arable land. There is excellent pasturage along the banks of the Meuse, and large herds of cattle and swine are here reared. The manufactures include soap, salt, pottery, paper, tobacco, straw-hats, beet-sugar, etc. Pop. (1901) 240,796.

LIM'BURG: province of Holland, formerly also a duchy in the Germanic Confederation; in the s.e. corner of the kingdom, being contiguous to the Belgian province of the same name; 848 Eng. sq. miles; cap. Maestricht (q.v.). Its surface is generally level, and the soil is poor, a great part of it consisting of moors and marshes. However, in the valleys of the Meuse and its chief tributaries, excellent crops of grain, hemp, flax, oil-seeds, etc., are raised, and cattle and sheep reared. There are many manufactories of gin, tobacco, soap, leather, paper, and glass. Pop. (1901) 292,072.

LIMBUS, n. *lĭm'bŭs* [L. *limbus*, a border or edge]: in *bot.*, the border or expanded part of a petal or flower; called also the LIMB. Limbus in Rom. Cath. theology is the name assigned to that place or condition of departed souls (spirits) in which those are detained who have not offended by any personal act of their own, but, nevertheless, as being stained with original sin, are not admitted to the divine vision. They distinguish it into the *Limbus Patrum* and the *Limbus Infantium*. By the former name they understand the place of those just persons who died before the coming of the Redeemer and were believed to be liberated by his descent into

Hades, and of whom it is said (I Peter iii. 19), that he preached to those spirits that were in prison. By Limbus Infantium is meant the place or state of the souls of those infants who died without baptism, including in the category idiots, cretins, and the like: see HELL: HADES. Regarding the nature of both these places of detention, great variety of opinion prevails in Rom. Cath. schools, and almost nothing has been authoritatively decided by the church: the Greek fathers usually inclined to a cheerful, the Latin fathers to a severe view.

LIME, n. *līm* [Ger. *leim;* Dut. *lijm;* Icel. *lím*, glue, any viscous substance which joins bodies together: L. *limus*, slime, mud: Dut. *leem*, loam, clay]: the white caustic earth used, when mixed with water, and most commonly with sand, as mortar or cement, obtained by burning limestone, chalk, marble, etc.: V. to cover or manure with lime; to cement. LI'MING, imp.: N. a dressing with lime. LIMED, pp. *līmd:* ADJ. dressed with lime. LIMY, a. *lī'mĭ*, containing lime; glutinous. LIM'INESS, n. *-nĕs*, state of being limy. LIME-BURNER, an attendant on a lime-kiln; one who prepares the lime for being slaked for mortar. LIME-KILN, *-kĭl*, a place for burning limestone. LIME-LIGHT, an intensely brilliant light produced by a jet of oxygen and a jet of hydrogen gas playing together upon a cylinder of lime; the oxyhydrogen light. LIME-WATER, water containing calcium hydroxide in solution. LIMESTONE (see below). QUICKLIME, calcined or burned limestone; the oxide of the metal calcium. SLAKED LIME, lime that has been thoroughly slaked or saturated with water; calcium hydroxide. BIRD-LIME. See LIME.

LIME: calcium oxide, CaO, also called *quick-*(living) *lime*, a white powder which becomes crystalline at 2,500° C., melts at 3,000° C., and volatilizes at higher temperatures. It is, therefore, highly refractive to heat and is used, in the form of blocks, for the making of lining of electric furnaces. Lime is generally prepared by heating calcium carbonate (limestone, marble, sea shells, etc.); the material thus obtained usually retains the shape of the original materials and is never pure oxide; it contains such impurities as were present in the substances used in its preparation, such as silica (sand) alumina, magnesia, ferric oxide, etc. If these exceed a certain proportion the lime is useless for ordinary purposes. Pure lime can be obtained from pure calcium carbonate, which is found in small quantity as Iceland spar and can be made in the laboratory. Lime is used for drying certain gases such as ammonia and for the absorption of carbon dioxide. On adding the proper quantity of water to lime it becomes 'slaked,' great heat is evolved and a light powder, called *slaked lime* or calcium hydroxide, $Ca(OH)_2$ is produced. This regenerates quick-lime when heated. Slacked lime is

used in enormous quantities for industrial and chemical purposes, as in the purification of illuminating gas, manufacture of bleaching powder, tanning industry, in the separation of certain dyes and, above all, in the making of *mortar* and *cement* (q.v.). The turbid liquid formed by stirring slaked lime with water is called *milk of lime*, and is used for white-washing stables and other places as it destroys vermin. It is also employed for the purification of certain kinds of *water* (q.v.). The *clear solution* of slaked lime in water is termed *lime water*. It contains about 1 part of lime in 750 parts of water, has a somewhat alkaline taste and is used medicinally to neutralize undue acidity of the stomach and, in admixture with oil, to relieve the pain from burns. Its chief value in the laboratory is to detect the presence of carbon dioxide, which gas, in contact with lime water, gives a milky white precipitate of calcium carbonate. The name, *air slaked lime*, is applied to the powder produced when lime is exposed to air. It is formed by the absorption of water and carbon dioxide from the atmosphere and is a variable mixture of calcium carbonate and calcium hydroxide. See CALCIUM.

LIME, n. *līm* [F. *līme*, a lime: Pers. *límú*, a citron, a lemon], (*Citrus acida*): fruit similar to the Lemon (q.v.), but much smaller, being only about 1½ inches in diameter, and almost globular, with a thin rind, and an extremely acid juice. It is of the ord. *Aurantiaceæ*, and is regarded by many botanists as a variety of the same species with the Citron and Lemon. The plant does not attain the magnitude of a tree, but is a shrub of about eight ft. in height, with a crooked trunk, and many spreading prickly branches. It is a native of India and China, but has long been cultivated in the W. Indies, s. Europe, etc. In the W. Indies, it is planted both for its fruit and for hedges. The fruit is used for the same purposes as the lemon; but its acid is by many reckoned more agreeable. Lime-juice is used like lemon-juice for the manufacture of citric acid, and it is itself used as a beverage, and is valued as an anti-scorbutic.—The Sweet Lime (*C. Limetta* of Risso), cultivated in s. Europe, appears to be a mere variety, probably the result of cultivation, with a sub-acid pulp.

LIME, n. *līm*, in BIRD-LIME [Ger. *leim*, glue (see LIME 1)]: the viscous substance prepared from the bark of the holly, mistletoe, and others, also from wheat-flour in the form of gluten, used to entangle and catch small birds who may light upon the branches that have been smeared with it: V. to smear with lime; to entangle; to ensnare. LI'MING, imp. LIMED, pp. *līmd:* ADJ. spread to ensnare as with bird-lime. LIME-TWIG, a twig covered with bird-lime.

LIME, n. *līm*, or LIME-TREE, *līm-trē*, or LIN'DEN [*lime* is a corruption of *linden:* AS. and Dan. *lind* (see LIN-

DEN).—Said also to be from lime, viscous substance, referring to the glutinous character of its young shoots; some refer it to a corruption of *line-tree*, from the fact of a kind of *lines* or cordage being obtained from the bast or bark], (*Tilia*): genus of trees of nat. ord. *Tiliaceæ*, natives of Europe, n. Asia, and N. America. The species are very similar; graceful, umbrageous trees; with deciduous, heart-shaped, serrated leaves, and cymes or panicles of rather small yellowish flowers; each cyme or panicle accompanied with a large, oblong, yellowish, membranous bractea, with netted veins, the lower part of which adheres to the flower-stalk. The wood is light and soft, but tough, durable, and particularly suitable for carved work. It is much used by turners, and for making pill-boxes. The charcoal made of it is often used for tooth-powder, for medicinal purposes, for crayons, and for the manufacture of gunpowder. For the use of the fibrous inner bark for making ropes, mats, and other plaited work, see BAST. It is used also as a healing application to wounds and sores, being very mucilaginous, and abounding in a bland sap. The leaves are in some countries used as food for cattle, but cows fed on them produce bad butter. The flowers have an agreeable odor, and abound in honey, much sought after by bees. The celebrated *Kowno Honey*, much valued for medicinal use and for making liqueurs, is the produce of great lime forests near Kowno, in Lithuania. The infusion and distilled water of the dried flowers are gently sudorific and antispasmodic. The former is in France a popular remedy for catarrhs. The seeds abound in a fixed sweet oil.—The EUROPEAN LIME, or LINDEN (*T. Europæa*), often attains a large size, particularly in rich alluvial soils. Some botanists distinguish a small-leaved kind (*T. parvifolia* or *microphylla*) and a large-leaved (*T. grandifolia*) as different species; others regard them as mere varieties. The HOODED or CAPUCHIN LIME is an interesting monstrous variety. The lime-tree is often planted for shade in towns; and the principal street of Berlin is called *Unter den Linden*, from the rows of lime-trees which line it. The lime is a very doubtful native of Britain, although indigenous on the continent from Scandinavia to the Mediterranean. In Britain, the lime-tree is generally propagated by layers.—The AMERICAN LIME (*T. Americana*, or *T. glabra*), often called BASSWOOD in the United States, has larger leaves than the European species. It abounds on the shores of Lakes Erie and Ontario. Other species take its place in more western and more southern regions.

LIME-HOUND, n. *līm-hownd* [F. *limier*, a blood-hound or lime-hound—from OF. *liem*, a leash—from L. *ligāmen*, a band or tie]: in *OE.*, a mongrel dog—so named from the leash by which it was held; a grey-hound; others say, a blood-hound; also called a LIMER, n. *lī'mėr*.

LIMEN. See THRESHOLD.

LIMERICK, *lĭm'ĕr-ĭk:* maritime county of the province of Munster, Ireland, separated by the Shannon on the n. from Clare, and bounded e. by Tipperary, s. by Cork, and w. by Kerry. Its extreme length is 35 m., breadth 54 m., 1,064 sq.m., or 680,842 acres. Population (1901) 146,098. The surface of Limerick is an undulating plain, which forms part of the central carboniferous limestone plain of Ireland. A mountainous district on the w. belongs to the great coal-tract of Munster, but the coal is of inferior quality, and is used chiefly for burning of lime. Within a short distance of the city of Limerick is a quarry which produces a reddish-brown marble of fine quality, as well as a black marble of inferior value. More than one of the districts contains iron, copper, and lead ores. The soil in general is very fertile, especially the district called the Golden Vale, more than 150,000 acres; as also a portion of the left bank of the Shannon below Limerick.

The principal towns of Limerick are the city of Limerick, Newcastle, and Rathkeale. Of secondary rivers, the Deel and the Maigue are most important. The great highway of water-communication is the Shannon itself, the navigation of which has been much improved, and in which the harbor of Foynes promises to form the nucleus of an extended foreign trade. Limerick communicates by railway with Dublin, Waterford, Cork, and Ennis. The population is chiefly agricultural, hardly any manufactures existing outside the city. Limerick anciently formed part of the territory of Thomond, the principality of the O'Briens. After the English invasion, it fell, through many vicissitudes, in great part to the Desmond Fitzgeralds—the confiscated estates of the last earl in Limerick containing no fewer than 96,165 acres. On the forfeitures after 1641 and 90, it was parcelled out to new proprietors. Limerick is more than usually rich in antiquities, both ecclesiastical and civil, of the Celtic as well as of the Anglo-Norman period. There were at one time nearly 40 religious foundations of the O'Briens alone, and the ruins of about 100 castles are still seen. The ecclesiastical remains of Adare are exceedingly interesting, two of the ancient churches having been restored, one as the Prot., the other as the Rom. Cath. parish church. Two other monastic ruins, in very good preservation, form a picturesque and interesting group of ecclesiastical remains.

LIM'ERICK: city, parliamentary and municipal borough, capital of the county Limerick; on the river Shannon, 120 m. w.s.w. from Dublin, with which it is connected by the great Southern & Western railway. Pop. (1901) 45,806. Limerick occupies both sides of the Shannon, together with a tract called King's Island, on a bifurcation of the river, and is divided into the English Town, the oldest part of the city (connected with

the extensive suburb called Thomond Gate, on the Clare side of the Shannon), and the Irish Town, which has extended on the s. bank of the river into what is now the best part of Limerick, called the New Town, or Newtown Pery, one of the handsomest towns in Ireland. Limerick has great antiquity. From its position on the Shannon, it was long an object of desire to the Danes, who occupied it in the middle of the 9th century, and held possession till reduced to a tributary condition by Brian Boroimhe, in the end of the 10th century. It was early occupied by the English, and 1210, King John visited and fortified it. It was assaulted and partially burned 1314 by Edward Bruce. Its later history is still more stirring. It was occupied by the Rom. Cath. party 1641, but surrendered to Ireton 1651. At the revolution, it was the last stronghold of King James. Having been unsuccessfully besieged by William after the victory of the Boyne, it was regularly invested 1691 by Gen. Ginkel, and after a vigorous and brilliant defense of several weeks, an armistice was proposed, which led to the well-known 'Treaty of Limerick,' the alleged violation of which has been the subject of frequent and acrimonious controversy between political parties in Ireland. The so-called 'Treaty Stone' still marks the spot, near Thomond Bridge, at the entrance of the suburb of Thomond Gate, where this treaty was signed. The modern city of Limerick is tasteful in its general character. Its public buildings, especially the Rom. Cath. cathedral, and church of the Redemptorist order, are imposing, and in excellent taste. Its charitable and religious establishments are munificent for a provincial town. It possesses several national schools, as well as many other educational institutions. The docks and quays are very extensive and commodious; and the export trade is conducted with enterprise. The Wellesley Bridge, over the harbor, cost £85,000. The manufactures of Limerick are not very extensive, but some of them have an imperial reputation —e.g., the manufactures of lace, gloves, and fish-hooks. There are several iron-foundries, flour-mills, breweries, distilleries, and tanneries, and ship-building is carried on.

LIMESTONE: a common and widely distributed rock, consisting essentially of carbonate of lime and varying greatly in composition, color and texture. Most limestones are of organic origin and represent the calcareous remains of sea animals, such as corals, foraminifera and mollusks. These remains may be reduced to a fine ooze by the action of the waves and in other ways, and the rock resulting from the consolidation of this ooze may show no trace of organic origin. Some limestones have been formed by the precipitation of calcium carbonate from sea water through evaporation in confined estuaries. Other limestones (travertine, calcareous tufa) have been formed by the deposition of calcium carbonate from springs, while still others represent calcareous deposits

in fresh-water lakes. The varieties of limestone are almost endless, including the crystalline limestones or marbles. Thus starting with nearly pure calcium carbonate, the calcium may be replaced gradually by magnesium till finally we have dolomite, the double carbonate of calcium and magnesium. Pure dolomite contains 21.72 per cent. of magnesia, but limestones containing over 5 per cent. are said to be dolomitic. Again the lime may be replaced by silica, with a gradual transition from limestone through cherty limestone to pure cherts; or again iron oxide may replace lime with a resulting transition from limestone to merchantable iron ore. Besides these chemical transitions silicious or argillaceous sediments may be laid down with the calcareous material, and in the resulting rocks we may trace gradual changes from limestone through limy sandstones to pure sandstone and from limestone through marls or calcareous shales to ordinary shales. Bituminous matter may make limestone black or give rise to asphaltic varieties. Besides all these varieties of composition, limestones are often classified according to their texture, as earthy limestone, oölitic limestone with a concretionary texture, like the roe of fish, etc. Under rock stresses, with possible rise in temperature, limestones become crystalline and change to marbles.

LIMIT, n. *lĭm'ĭt* [F. *limite*, a limit—from L. *līmes* or *limĭtem*, a limit: It. *limite*]: utmost extent; bound or border; the thing which bounds; restraint; hindrance: V. to set bounds to; to circumscribe; to restrain. LIM'ITING, imp.: ADJ. circumscribing; restricting. LIM'ITED, pp.: ADJ. narrow; restricted. LIM'ITLESS, a. *-lĕs*, unbounded; immense. LIMITABLE, a. *lĭm'ĭt-ă-bl*, that may be bounded. LIM'ITER, n. *-tėr*, one who limits; in *OE.*, a friar licensed to beg, or doing duty, within certain limits. LIM'ITA'TION, n. *-tā'shŭn*, the act of bounding; restriction; in *OE.*, limited time. LIM'ITEDLY, ad. *-lĭ*. LIM'ITEDNESS, n. *-nĕs*, the state of being limited. LIMITED LIABILITY: see under LIABLE. LIMITARY, a. *lĭm'ĭt-ėr-ĭ*, in *OE.*, that acts as a guard at the boundaries; restrictive. LIMITATE, a. *lĭm'ĭ-tāt*, in *bot.*, bounded by a markedly distinct line.—SYN. of 'limit, n.': boundary; border; bound; frontier; confines; precincts; purlieu; edge; termination.

LIMITATION, in Law: limit of time allowed to parties in which to commence their suits or actions, or other proceedings. In all civilized countries, some period is prescribed by statute (called statutes of limitations, or prescription) with this view, though the limit is variously fixed in different countries. In England, and most of the states of the union, suits to recover land must generally be brought (or the proper entry be made) within 20 years; and suits to recover debts (including bills of exchange) and damages within six years.

In the United States generally, personal actions must be brought within six years; actions for slander within two years. In Scotland, Prescription is the principle adopted. Prescription looks to the length of time during which the defendant in a disputed claim has been in possession of the matter in dispute; while Limitation looks to the length of time during which the plaintiff has been out of possession: see PRESCRIPTION, in Law.—In Louisiana, the laws of limitation are essentially those of the *Partidas*, or 'Spanish code'; thus exceptional among the states.

LIMITED LIABILITY. See JOINT-STOCK COMPANY; LIABILITY.

LIMIT OF ELASTICITY. See ELASTICITY.

LIMITS OF INTEGRATION: the extreme values which a variable x takes in a definite integral. Thus, in $\int_a^b x dx$, a and b are the limits of integration. This use of the word *limit* is entirely different from that in *limit of a variable*.

LIMIT OF THE ROOTS OF A NUMERICAL EQUATION: a number greater or less than any of the roots of the equation. Thus, if the roots are $-4.3, -2, 3.1, 5.1$, any number above 5.1 is an upper limit and any number less than -4.3 is a lower limit. We may also speak of the lower limit of the positive roots (here <3.1) and of the upper limit of the negative roots (here >-2).

LIMIT OF A VARIABLE: a variable x is said to have a constant quantity a as a *limit* when the variable x assumes successive values in such a way that $a-x$ becomes and remains numerically as small as we please. Thus, if x assumes successively the values in the never-ending sequence $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \ldots$, it is readily seen that x increases toward 1 and that the limit of x is 1; for, no matter how small a positive value (different from zero) we may select, the difference $1-x$ will ultimately become and remain smaller than that value. For instance, if we select the small value .01, then the difference $1-x$ becomes and remains less than .01 after x reaches the term $\frac{100}{101}$. In this example the variable is always *smaller* than its limit. The sequence $2\frac{1}{2}, 2\frac{1}{3}, 2\frac{1}{4}, 2\frac{1}{5}, \ldots$ defines a variable which approaches the limit 2 and which is always *larger* than its limit. If in the infinite series $1-\frac{1}{2}+\frac{1}{4}-\frac{1}{8}+\ldots$ we take the sum of the first two terms, then of the first three terms, then of the first four, etc., we get a never-ending sequence of sums $\frac{1}{2}, \frac{3}{4}, \frac{5}{8}, \ldots$ which defines a variable *alternately less and greater* than its limit $\frac{2}{3}$. This limit is called the sum of the infinite series. In the illustrations given thus far, the variable never reaches its limit. This is due to the fact that the number expressing the limit of the variable x is not itself a member of the never-ending sequence. The endless sequence $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \ldots$ does not contain 1, the limit of the variable x, hence x never reaches

its limit. We can modify this sequence thus: $\frac{1}{2}$, 1, $\frac{2}{3}$, 1, $\frac{3}{4}$, 1, $\frac{4}{5}$,... If x takes successively these values, then the limit of x is 1, as before, but the variable reaches the value 1 as often as we please. It is readily seen that the never-ending sequence of numbers 1, $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$,..., or 1, $\frac{1}{2}$, 0, $\frac{1}{3}$, $\frac{1}{4}$, 0, $\frac{1}{5}$, ... defines a variable whose limit is zero. Not all variables have limits. Thus, the variable taking successively the values 1, 2, 3, 4,..., or 5, 3, 5, 3, 5, ..., or $\frac{1}{2}$, 0, $\frac{2}{3}$, 0, $\frac{3}{4}$, 0, $\frac{4}{5}$,... has no limit.

Variables and limits are employed widely in the proofs of theorems in geometry. Thus, the area of a circle may be determined approximately by considering it as the limit of the areas of regular inscribed or circumscribed polygons of an ever-increasing number of sides. The never-ending sequence is in this instance made up of the areas of the successive polygons. In the same way the length of the circumference may be defined as the limit of the perimeters of inscribed or circumscribed regular polygons of a constantly increasing number of sides. The surface and volume of a cylinder and cone are limits, respectively, of inscribed or circumscribed prisms and pyramids having regular bases. Thus, the theory of limits enables one, from rectilinear figures, to draw inferences relating to curvilinear figures. To apply the theory of limits rigorously to the topics treated in Geometry, in the Differential and Integral Calculus, or in the Theory of Functions requires the careful consideration of incommensurable data, involving irrational numbers. For that reason one encounters here all the difficulties which cluster round the notion of the irrational. Many of the customary geometric proofs, based on the theory of limits, are considered invalid by the modern rigorous school of mathematicians, for the reason that irrational numbers do not receive due attention and much is made to rest upon the reader's naïve intuition. On this matter consult H. B. Fine's *College Algebra* (1905); J. Pierpont's *Theory of Functions of Real Variables* (Vol. I., 1905); J. W. A. Young's *The Teaching of Mathematics in the Elementary and the Secondary School* (1907). Suppose that a case of incommensurability, as usually treated in elementary texts, involves a straight line of variable length. The unit of length and the law of variation are so chosen that the successive lengths of the variable line can be expressed by rational numbers, forming a never-ending sequence. But the limit of the variable is not a rational number. For example, the variable lengths may give the sequence of rational numbers 1, 1.4, 1.41, 1.414, 1.4142,... Here the irrational number $\sqrt{2}$ is the limit. But to apply the test by which we can determine whether $\sqrt{2}$ is really the limit or not, we must consider the difference $\sqrt{2}-x$, where x represents the variable line, and we must see whether that difference becomes and remains numerically less than any assigned arbitrarily small positive quantity. In other words, the reader is

asked to subtract a rational number from an irrational one and then to compare the remainder with a third number. The trouble with all this is that most of our elementary books do not carefully define irrational numbers, nor do they define the operation of subtraction when irrational numbers are involved, nor do they define the relations 'less than' and 'greater than' for such numbers. It is thus seen that the customary modes of proof do not rest upon clear and explicit definitions of fundamental concepts, but draw upon our intuitions, and are, therefore, far from rigorous. The case is even worse when we consider regular polygons inscribed in a circle. If the number of sides increases as by continued doubling, then the successive areas of the varying polygons are generally irrational numbers. Thus, instead of the sequence of rational numbers with an irrational limit, we have now irrational numbers even in the sequence itself.

The fact that the variable x approaches the limit a is usually indicated by the notation $\lim x=a$ or by $x \doteq a$. In the more complicated symbolism for a sequence $a_1, a_2, \ldots, a_n, \ldots$ the limit is indicated by $\lim_{n=\infty} a_n$. Thus, $\lim_{n=\infty} x^n=0$, when x is numerically less than 1. It can be proved that the limit of the sum, difference, product or quotient of two variables which approach limits is the sum, difference, product or quotient of these limits. In symbols, $\lim(x \pm y)=\lim x \pm \lim y$, $\lim xy=\lim x \cdot \lim y$, $\lim \frac{x}{y}=\frac{\lim x}{\lim y}$. In the last case y and $\lim y$ cannot be zero, because division by zero is an impossible operation. It is interesting to observe that in case of double limits the commutative law does not necessarily hold. In the binomial $1-x^n$, let x and n be both positive, and $x<1$, but approaching 1 as a limit; let n increase toward infinity. If we let one vary and then the other, we get different results, according to which variation is taken first. We get the following peculiar results: $\lim_{n=\infty} \lim_{x=1} (1-x^n)=0$, $\lim_{x=1} \lim_{x=\infty} (1-x^n)=1$.

LIMN, v. *lĭm* [F. *enluminer*, to illuminate, to limn—from L. *illuminārĕ*, to illuminate]: to draw or paint; to paint in water-colors—chiefly restricted to portrait or figure painting. LIMNING, imp. *lĭm'ĭng:* N. the art or act or drawing or painting in water-colors. LIMNED, pp. *lĭmd.* LIMNER, n. *lĭm'nẽr*, one who paints on canvas or paper; a portrait-painter.

LIMNÆA, *lĭm-nē'a* [Gr. *limne*, a swamp]: genus of gasteropodous mollusks of ord. *Pulmonata*, giving its name to a family, *Limnæadæ*, allied to *Helicidæ* (Snails), *Limacidæ* (Slugs), etc. The species of this family are numerous, and abound in fresh waters in all parts of the world. They feed on vegetable substances. They all have a thin, delicate, horn-colored shell, capable of con-

taining the whole animal when retracted, but varying much in form in the different genera; being produced into a somewhat elongated spire in the true *Limnœidæ* (POND-SNAILS), while in *Planorbis* the spire is coiled in the same plane, and in *Ancylus* (RIVER LIMPETS) it is limpet-shaped, with a somewhat produced and recurved tip. Many of the *Limnœidæ* have a habit of floating and gliding shell downward at the surface of the water, as may readily be observed in a fresh-water aquarium, in which they are of great use in preventing the excessive growth of confervoids, and removing all decaying vegetable matter. They serve the same purpose in the economy of nature in lakes, ponds, and rivers, and furnish food for fishes. They are hermaphrodite. They deposit their eggs on stones or aquatic plants, enveloped in masses of a glairy substance. The development of the young mollusk may easily be watched in the aquarium, the membrane of the egg being perfectly transparent.

LIMNORIA, *lĭm-nō′rĭ-a:* genus of crustacea of the ord. *Isopada,* containing only one known species, which, however, is important from the mischief that it does to piers, dock-gates, and other wood-work immersed in sea-water on some coasts of Europe. It is only about a sixth of an inch in length, of an ash-gray color, with black eyes, composed of numerous *ocelli,* placed close together. The head is broad. The legs are short. The general appearance resembles that of a small wood-louse, and the creature rolls itself up in the same manner, if seized. The contents of the stomach consist of comminuted wood, and food is the object of the perforation of wood for which the limnoria is notable. It was very troublesome during the building of the Bell Rock Lighthouse, England, and the piers at Southampton have suffered greatly from it. The kyanizing of wood and other expedients have been resorted to, to prevent its ravages.

LIMOGE′ (or LIMOGES′) STYLE, in Enamel. See ENAMEL.

LIMOGES, *lē-mōzh′:* capital of the dept. of Haute-Vienne, France, and of the former province of Limousin; picturesquely situated on a hill in the valley of the Vienne, 67 m. s.e. of Poitiers. It is an ancient city, the seat of a bishop: some of its houses date from the middle ages. In the 4th century it had palaces, baths, its own senate, and the right of coinage. The fortified walls which surrounded the town have been replaced by fine shady boulevards. The principal edifices are the cathedral, commenced in 1273, presenting both Romanesque and Gothic features; the Gothic church of St. Michel des Lions; the church of St. Pierre du Queyroix; a modern town-hall, palace of justice, bishop's palace, public library, and several hospitals. The principal industry is the manufacture of porcelain; there are also wool and

cotton spinning mills, cloth factories, foundries, paper-mills, and extensive shoe and clog making establishments. Limoges has a considerable trade in cereals, wine and spirits, wood, and cattle. It is the seat of courts of first resort and commerce; of a consulting chamber of commerce, lyceum, preparatory school of medicine, normal schools for male and female teachers, etc. It was the Augustoritum of the Romans, and afterward received the name Lemovica, whence the present Limoges. Before the French Revolution, it had more than 40 convents. Pop. (1901) 84,121.

LIMONITE, n. *lī'mŏn-īt* [Gr. *leimon*, a moist, grassy place: F. *limonite*]: a term applied to brown iron ore—so called because allied varieties are found in bogs. It is a hydrated oxide of iron ($2Fe_2O_3.3H_2O$), of a brownish color, occurring in mammillated or botryoidal masses, which when broken across show a fibrous radiating structure, and also in compact and earthy masses. It is opaque, rather brittle, moderately hard, and has specific gravity 3.6 to 4. It dissolves in warm aqua regia; when heated it loses water and becomes magnetic. It is a very important ore of iron, and is found abundantly in the United States, especially in Virginia and Alabama, and in other parts of America; also on the continent of Europe, and in some parts of Great Britain. See HÆMATITE.

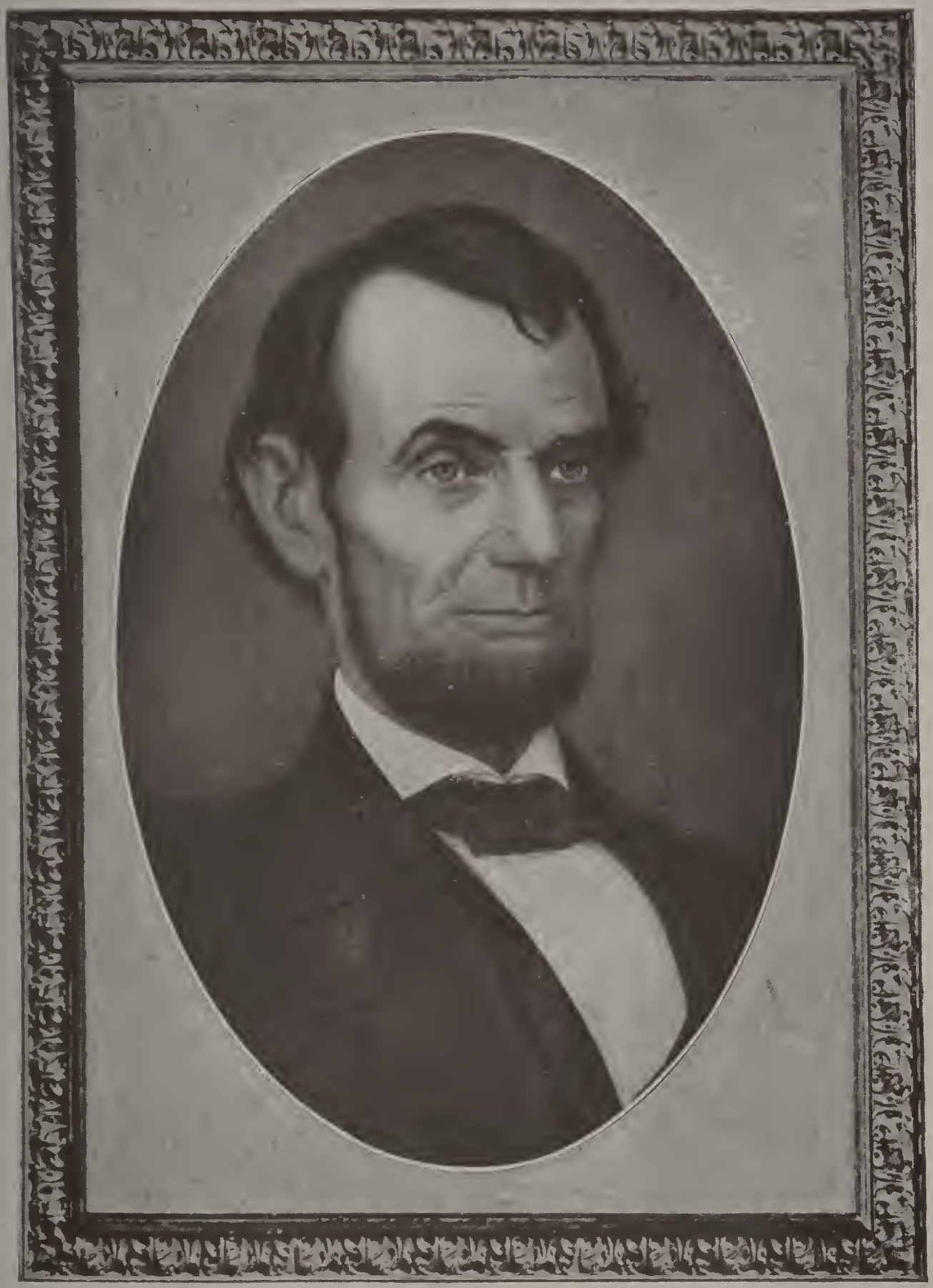
LIMOUS, a. *lī'mŭs* [L. *limus*, slime]: muddy; slimy; thick.

LIMOUSIN, *lē-mô-zăng':* formerly a province of France, now comprised in the depts. Haute-Vienne and Corrèze. See LIMOGES.

LIMP, v. *lĭmp* [Low Ger. *lumpen*, to limp: Dan. *lumpe*, to limp, to go lame]: to walk as with a slight lameness; to halt: N. a halt in walking. LIMPING, imp. *lĭmp'ĭng:* ADJ. halting; walking lamely. LIMPED, pp. *lĭmpt.* LIMP'ER, n. *-ẽr*, one who walks lamely. LIMP'INGLY, ad. *-lĭ.*

LIMP, a. *lĭmp* [Swiss, *lampen*, to hang loose: Icel. *limpa*, limpness, weakness (see LIMBER 1)]: wanting stiffness; flexible; flaccid.

LIMPET, n. *lĭm'pĕt* [probable OF. *lempette* or *lempine* —from L. *lepas* or *lepădem*, a limpet], (*Patella*): genus of gasteropodous mollusks, of ord. *Cyclobranchiata*, type of the family *Patellidæ*. In all this family, the shell is nearly conical, not spiral, and has a wide mouth, and the apex turned forward. The animal has a large round or oval muscular foot, by which it adheres firmly to rocks, the power of creating a vacuum being aided by a viscous secretion. Limpets live on rocky coasts, between tide-marks, and remain firmly fixed to one spot when the tide is out, as their gills cannot bear exposure to the air, but move about when the water covers them; many of them, however, it would seem, remaining long on the same spot, which in soft calcareous rocks is found hol-



ABRAHAM LINCOLN

lowed to their exact form. They feed on algæ, which they eat by means of a long ribbon-like tongue, covered with numerous rows of hard teeth; the COMMON LIMPET (*Patella vulgaris*) having no fewer than 160 rows of teeth on its tongue, 12 in each row, 1,920 teeth in all. The tongue, when not in use, lies folded deep in the interior of the animal. The gills are arranged under the margin of the mantle, between it and the foot, forming a circle of leaflets. The sexes are distinct.—The power of adherence of limpets to the rock is very great, so that unless surprised by sudden seizure, they are not easily removed without violence sufficient to break the shell. The species are numerous, and exhibit many varieties of form and color. The Common Limpet is much used for bait by fishermen; it is used also for food. Some of the limpets of warmer climates have very beautiful shells.

LIMPID, a. *lĭm'pĭd* [F. *limpide*, clear, bright—from L. *limpĭdus*, clear, bright: It. *limpido*]: clear; transparent. LIM'PIDNESS, n. *-nĕs*, or LIMPID'ITY, n. *-pĭd'ĭ-tĭ* [F. *limpidité*]: clearness; transparency; purity.—SYN. of 'limpid': pellucid; translucent; lucid; pure; crystal.

LIMPO'PO. See OORI.

LIMULUS, n. *lĭm'ū-lŭs* [L. *limŭlus*, somewhat askance—from *limus*, looking sidewise]: the Molucca crab, the king-crab, or horse-shoe crab, a creature of singular form, having a long, spear-shaped tail.

LIN, or LYN, n. *lĭn* [AS. *hlynna*, a torrent: W. *llyn*, a pool]: a fall of water; a cataract; the face of a precipice.

LINA'CEÆ. See FLAX.

LINCH-PIN, n. *lĭnsh'pĭn* [AS. *lynis*, an axle-tree: Ger. *lündse* and *lünse;* Dut. *lundsch* and *luns;* Dan. *lundstikke*, a linch-pin]: a pin which fastens a wheel on the axle-tree.

LINCOLN, *lingk'ŭn:* city, cap. of Logan co., Ill.; on the Peoria, Decatur & Evansville, Chicago & Alton, and Illinois Central railroads; 135 miles s.w. of Chicago. It is located in a coal mining and agricultural region, and has a number of manufacturing industries, including flour mills, and excelsior, cellulose, and mattress factories. Farm and dairy products also contribute to the city's wealth. It has a high school and a Carnegie library, and is the seat of Lincoln College (Cumberland Presb.), founded in 1866. It contains the county courthouse, where Abraham Lincoln once practised as a lawyer; the State Institution for Feeble Minded Children, Illinois Odd Fellows' Orphans' Home, Saint Clara's Hospital, and a Deaconess Home and Hospital. It was settled in 1835 and incorporated in 1865. Pop. (1900) 8,962; (1910) 10,892.

LINCOLN, *lĭngk'ŭn:* city, county-seat of Lancaster co., and capital of Neb., on Salt creek, a tributary of the Platte river; about 60 m. s.w. of Omaha, 475 m. w. by s.

of Chicago; on the Chicago, Burlington & Quincy, the Chicago, Rock Island & Pacific, the Union Pacific, the Missouri Pacific, and the Chicago & Northwestern railroads. The city is beautifully located in the midst of a fertile, undulating prairie, containing valuable salt springs, and affording plenty of excellent building sites; it is laid out regularly, with numbered avenues running n. and s., intersecting the streets lettered according to the alphabet, the avenues 120 ft. wide and the streets 100 ft. It contains a number of handsome public buildings, including the state capitol, the county court house, and a Carnegie library. Congress has recently made a generous appropriation for a new federal building, on completion of which the old building will become the city hall. There are also numerous churches, St. Elizabeth's Hospital, the Catholic Orphans' Home, a home for the friendless; and, just outside the city limits, the state penitentiary, and the state insane asylum. Besides over 20 public schools and a high school, the city contains three universities, three colleges, one preparatory school, two parochial high schools, and three musical conservatories. The chief institutions are the State University and Agricultural College, Wesleyan University (situated in a suburb), Union College (Seventh Day Adventists), and Cotner University (Christian). There are also in the city the university library, 60,000 volumes; the state library, 40,000; the city, 15,000; and the high school, about 3,000. A mayor, a council of one chamber, and an excise board of three members control municipal affairs. Lincoln contains a creamery which is the centre of the butter-making industry for southern Nebraska and northern Kansas, and has other industrial establishments, including slaughtering and packing houses. Here also is one of the largest printing and publishing houses in the west. Pop. (1900) 40,169; (1910) 43,973.

LINCOLN (called by the Romans *Lindum;* from which, with *Colonia* subjoined, comes the modern name): city of England, cap. of the county of Lincoln (see LINCOLNSHIRE); parliamentary and municipal borough and county of itself; on the Witham, 140 m. n.n.w. of London by railway. Built on the slope of a hill, which is crowned by the cathedral, the city is imposing in effect, and can be seen from a distance. It is very ancient, is irregularly laid out, and contains many interesting specimens of early architecture. The cathedral, one of the finest in England, is the principal building—earliest purely Gothic building in Europe, though comprising within its precincts a variety of styles; an object of unrivalled interest to architect and antiquary. Some portions of it date as far back as 1092, some other parts are of the 12th and 13th c. It is surmounted by three towers, two of which, 180 ft. in height, were formerly continued by spires of 101 ft. The central tower, 53 ft. square, is 300 ft. high. The interior length of the cathe

1. Court House, Lincoln, Nebraska.
2. Main Building, University of Nebraska.

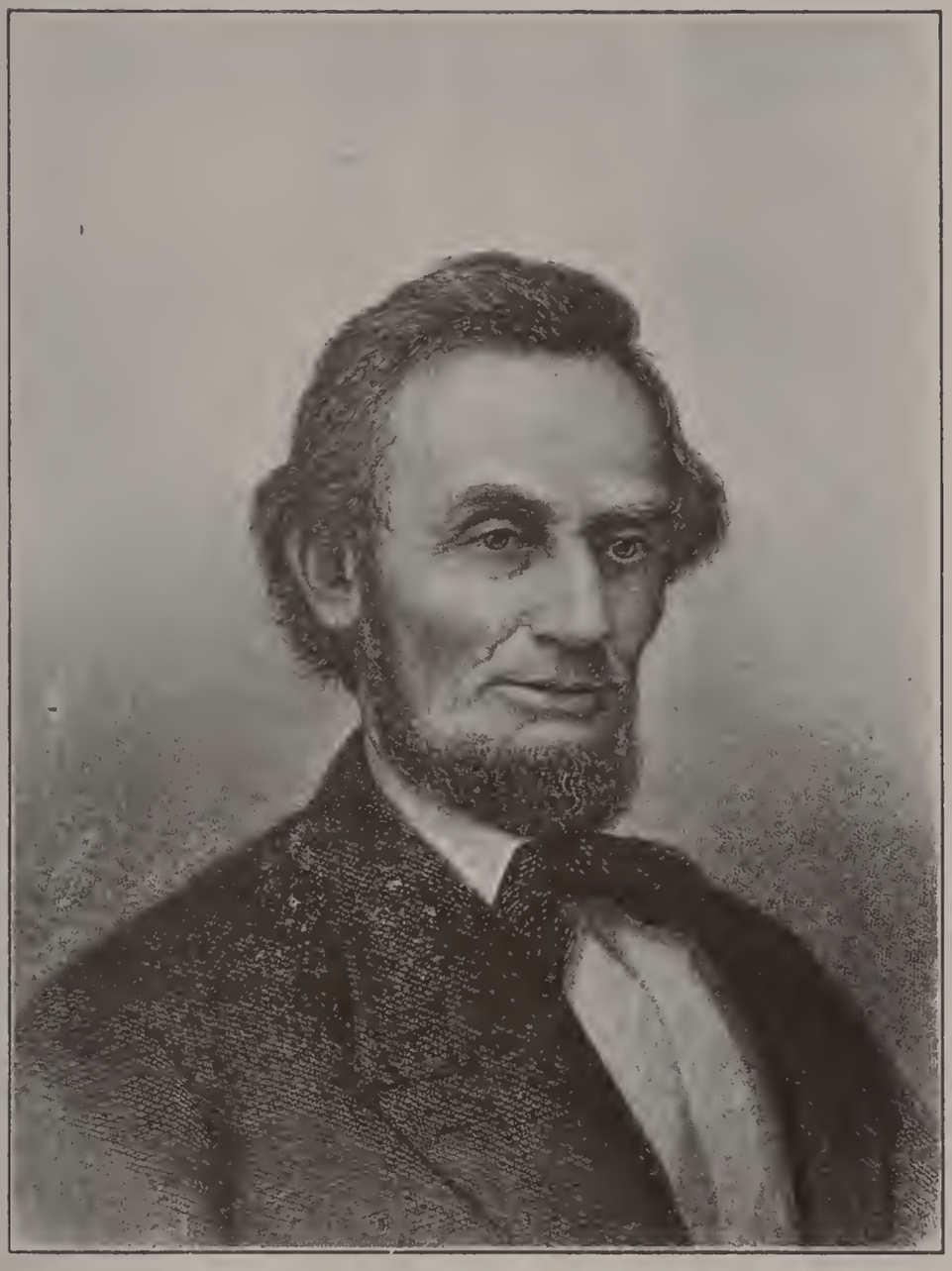
dral is 482 ft., the width 80 ft. The famous bell, Tom of Lincoln, cast 1610, was hung in one of the w. towers: it was broken up 1834, and, with six other bells, was recast to form the present large bell and two quarter bells. The bell in the central tower is 5 tons 8 cwt. in weight, and 6 ft. 10½ inches in diameter at the mouth. Lincoln contains many other interesting religious edifices, among which are three churches, dating from before the Reformation, etc., numerous schools, and benevolent institutions. Several iron foundries, manufactories of portable steam-engines and agricultural machines, and large steam flour-mills are in operation here, and there is active trade in flour; also brewing and machine-making, with trade in corn and wool. Pop. (1901) 48,784.

Lincoln, under the Romans, was a place of importance, and under the Saxons and the Danes, it preserved a good position. It was the seat of extensive and important trade at the time of the Norman Conquest; but its advancement after that time was not rapid. It contains some very interesting antiquities, e.g., the Roman gate, the remains of the palace and stables of John of Gaunt, and the town-hall.

LINCOLN, *lĭngk'ŭn*, ABRAHAM, sixteenth President of the United States: 1809, Feb. 12—1865, Apr. 15; b. Hardin co., Ky. His ancestors came from England about 1638, settling in Mass. His grandparents moved from Va. to Ky. 1780, where his grandfather was killed by an Indian four years afterward, leaving a widow with three sons and two daughters, Thomas Lincoln, father of Abraham, being then but six years old. Thomas Lincoln married Nancy Hanks, of Va., 1806, and settled in what is now Larue co., Ky., where Abraham was born, and where he began going to school when, 1816, the family removed to Ind. Here in their rude log-cabin his mother died, 1818—a bright, intelligent, industrious, and devout woman, of whom her son could truly say what he used to say of his step-mother, 'All that I am, or hope to be, I owe to my angel mother.' A year and a month later his father married again; the family lived a poor, laborious life; the son receiving only about a year of the rudest school education, but showing great taste for reading, perusing over and over again the few books he could get, such as *Æsop's Fables, Pilgrim's Progress, Robinson Crusoe,* a *History of the United States, Life of Washington,* etc. In 1825, he managed a ferry across the Ohio; 1828, he took a flat-boat with produce to New Orleans; 1830, the family removed to Ill., clearing and fencing 15 acres of land about 10 m. w. of Decatur. This year Abraham became of age. He was 6 ft. 4 in. tall, of gigantic strength and great agility, and by his studious use of every opportunity had gained a fair mastery of the English language, of American history, and of elementary mathematics, besides having developed a very practical and shrewd turn of mind, unusual narra-

tive and rhetorical powers, with great humor and sterling integrity of character. In 1831, he took another flat-boat to New Orleans, for Denton Offutt; and on his return attended to the latter's store in New Salem, Menard co., where he employed his abundant leisure in studying surveying and the principles of law. Next year came the Black Hawk Indian war. Lincoln, already a self-announced candidate for the legislature, at once enlisted, and was made captain, but served in that capacity only about a month, when his company was mustered out of service. He immediately joined another company, however, as private; and served without any notable experiences, until finally mustered out a few weeks later, 1832, June 16. Returning home, he entered on a late and hasty canvass for the legislature, announcing his platform thus: 'I presume you all know who I am; I am humble Abraham Lincoln. I have been solicited by many friends to become a candidate for the legislature. My politics are short and sweet, like the old woman's dance. I am in favor of a national bank; I am in favor of internal improvements, and a high protective tariff. These are my sentiments and political principles. If elected, I shall be thankful; if not, it will be all the same.' The form of this speech, however, rests upon the memory of a hearer, who wrote it out a generation afterward. He was defeated, though his own neighborhood voted for him almost unanimously. Thereupon he entered into partnership with another man in the grocery and dry goods business in New Salem. His partner was worthless, and the firm failed, Lincoln being left with the indebtedness of the concern resting upon him. By frugality and hard work he paid it off entirely in a few years. He next took to studying law, and to surveying. In 1833, he was appointed postmaster of New Salem, with a beggarly salary but plenty of time for reading and study. He held the office for three years, being at the same time also deputy for the county surveyor. In 1834, he was again candidate for the legislature, and this time was elected by a large majority, afterward being re-elected three times, 1836, 1838, and 1840, until he refused to serve again. In 1835, he became engaged to Ann Rutledge, a daughter in the family with whom he was boarding at New Salem. But before they could be married this young lady died, leaving her lover despondent.

His service in the legislature was such as to make him a recognized leader of the whig party, and a proficient lawyer. He was instrumental in having the state capital removed from Vandalia to Springfield, where he settled 1837. In the legislature, too, he had his first encounter with Stephen A. Douglas, whose political and oratorical opponent he continued to be from this time until 1860, when Douglas was finally defeated and Lincoln elected to the presidency. In 1840, Lincoln entered with fervor



LINCOLN.

into the campaign for Harrison, being an elector on the Harrison ticket; and the same year also met and engaged himself to marry Mary, daughter of the Hon. Robert S. Todd, who had just come from Lexington, Ky. For some reason connected with this engagement, Lincoln fell into a deep melancholy and was in danger of becoming insane. He recovered, however, and married Miss Todd, 1842, Nov. 4.

Always an admirer of Henry Clay, he was made an elector on the Clay ticket 1844; and two years afterward was elected to congress, by an unusually large majority, over the Rev. Peter Cartwright. Now began his anti-slavery record in his proposing a scheme for the abolition of slavery in the District of Columbia, which, however, characteristically moderate as it was, congress refused to consider. He served only one term in congress, after which for several years he was not specially active in politics, until the repeal of the Missouri Compromise, 1854, an act which he regarded as a gross breach of faith, and which involved him in a series of debates with Douglas in the years following, which attracted national attention, and greatly enhanced the reputation of Lincoln as a debater and orator. In 1858, he appeared before the state convention which had placed him in nomination for U. S. senator. In his speech he uttered these prophetic words, soon after to be fully realized: 'A house divided against itself cannot stand. I believe this government cannot endure permanently half slave and half free. I do not expect the union to be dissolved—I do not expect the house to fall—but I do expect it will cease to be divided. It will become all one thing or all the other. Either the opponents of slavery will arrest the further spread of it, and place it where the public mind shall rest in the belief that it is in course of ultimate extinction; or its advocates will push it forward, till it shall become alike lawful in all the states, old as well as new—North as well as South.' These words were deemed highy impolitic by his partisans; and, indeed, they did not secure him the senatorship, Douglas being re-elected, much to Lincoln's disappointment. But they did enhance his fame as a man above political trickery and time-serving, as a statesman capable and courageous enough to treat political questions from the ethical side, and as involving fundamental principles of right and truth.

It was largely owing to the attention that his six years' contest with Douglas aroused, and to his manifest superiority over the 'little giant,' culminating in his famous Cooper Institute address in New York, 1860, Feb. 27, that he began more and more to be talked of in connection with the republican nomination for the presidency. When the republican national convention met at Chicago, 1860, May 16, William H. Seward was the leading candidate, though Lincoln was the popular man in

the doubtful states. On the third day balloting began, and Lincoln was nominated on the third ballot, his chief competitors, besides Seward, being Cameron, Chase, Dayton, McLean, Collamer, and Bates. Next day he was officially notified of his nomination, at Springfield; and accepted in a brief speech. Hannibal Hamlin of Maine was nominated for the vice-presidency. Many conservatives, however, were not satisfied, and nominated Bell as the candidate of the 'constitutional union' party; but their defection was more than offset by the split in the democratic party, the more conservative element nominating Douglas, while the extreme slavery men utterly repudiated him and nominated Breckenridge. The canvass was an exciting one, it being felt that the gravest national questions depended for solution on the result. Lincoln received of the popular vote, 1,866,452; Douglas, 1,375,157; Breckenridge, 847,953; Bell, 590,631. None of them had a majority. But when, Dec. 5, the electoral college met, the vote of the electors stood as follows: Lincoln, 180; Douglas, 12; Breckenridge, 72; Bell, 39; giving Lincoln a clear majority of 57.

Even before the election certain extremists in the south had been preparing for secession, and, Nov. 10, four days after it, the legislature of South Carolina ordered the state convention to consider the question of secession, and, Dec. 20, that state formally seceded from the union, and by 1861, Feb. 18, the 'Confederate States of America' were organized, and Jefferson Davis was made their president. Troops were being massed in the south, arms and ammunition accumulated, and fortifications strengthened. In this ominous state of affairs the president-elect was preparing for his inauguration. Fearing assassination, his friends prevailed on him to travel to Washington in comparative secrecy, where he was inaugurated 1861, Mar. 4. His inaugural was temperate yet firm in tone, denying the right of any state to secede, and declaring his resolve to maintain the union at all hazards. The Confederates, however, had already in Jan. virtually begun the civil war by besieging Fort Sumter, in Charleston harbor, which was held by a handful of Federal troops under Maj. Robert Anderson. Apr. 13 this fort was obliged to surrender after 34 hours' bombardment by the Confederates under Gen. Beauregard. Two days afterward Lincoln issued a proclamation calling for 75,000 militia to serve 3 months, and, May 4, ordered the enlistment of 64,748 soldiers and 18,000 seamen for 3 years' service, and May 19, instituted a blockade of the southern ports. The first blood was shed when, in response to this call, the 6th Mass. regt. was attacked by a mob while marching through Baltimore. Other minor engagements followed; and, 1861, July 21, the first important battle was fought, at Bull Run, the Federal forces being routed, and the national capital endangered. The north speedily recovered from this

shock, and volunteers poured into Washington without waiting to be called. In Oct. Gen. Scott was retired, and Gen. McClellan given command of the Federal troops. He set himself with great skill thoroughly to organizing the army.

Meanwhile the slavery question came more and more into the foreground. 1861, Aug., congress passed an act confiscating the rights of slaveholders in active rebellion to their slaves. Extreme abolitionists urged more radical measures. Gen. Fremont declared martial law in Missouri, and the freedom of all slaves owned by active rebels. Lincoln, believing such a measure premature and unauthorized, countermanded it. Sentiment was divided in the north; but the great mass of the people sustained the conservative counsels of the president. 1862, Mar. 6, he sent a message to congress recommending a gradual abolition and offering pecuniary compensation to slave owners. Congress passed an act in conformity with this, but no result followed. In April it passed an act, which Lincoln approved, emancipating all slaves in the District of Columbia, with compensation to the owners. When Gen. Hunter, however, 1862, May 9, presumed to declare all slaves in Georgia, Florida, and South Carolina free, Lincoln at once issued a proclamation declaring this order void and unauthorized, at the same time repeating the offer to compensate all who should voluntarily free their slaves. In the north the anti-slavery sentiment was steadily growing; and in June congress prohibited slavery in all the territories. July 12, Lincoln again specially urged upon the border slave-states his proposal of a gradual emancipation with compensation, saying: 'If the war continue long, as it must if the object be not sooner attained, the institution in your states will be extinguished by mere friction and abrasion—by the mere incidents of the war. It will be gone, and you will have nothing valuable in lieu of it.' But his words seemed to have no effect. It was then, 1862, July, that he reached the conclusion that a general and final abolition of slavery must soon be brought about, and that apparently nothing else was left him to do than to issue a proclamation of emancipation and so accomplish the great end at one blow. He soon wrote such a proclamation and submitted it to members of his cabinet. But the course of military affairs constrained him not to consummate the matter just at this time. 'My paramount object is to save the union,' he said, 'and not either to save or destroy slavery. If I could save the union without freeing any slave, I would do it; if I could save it by freeing all the slaves, I would do it.'

Meanwhile the outcome of the war at this period seemed doubtful. Early in 1862, the Federal forces had had successes at Fts. Donelson and Henry, and at Shiloh. Roanoke island on the North Carolina coast had been taken. The *Monitor* had subdued the *Merrimac*. New

Orleans had been taken, and the Mississippi in the main was in the control of the Federal government. But events were less favorable during the second quarter of the year. McClellan had moved 'on to Richmond,' but had finally been forced to retreat and abandon the campaign. Pope had been driven back upon Washington. At Antietam, indeed, Lee's advance northward had been stopped, but he was not fatally crippled. Fredericksburg and Chancellorsville both had been disastrous Federal defeats. All this, however, was but ripening popular sentiment, and making clear the necessity of emancipation, if only as a war-measure, a means of self-preservation. Accordingly, 1862, Sep. 22, Lincoln issued his preliminary proclamation, declaring that on and after 1863, Jan. 1, all persons held as slaves in states or parts of states then in rebellion, should be free. Then, after another attempt, Dec. 1, to bring about gradual abolition with compensation, he made the final proclamation declaring Arkansas, Texas, Mississippi, Alabama, Florida, Georgia, South Carolina, North Carolina, and certain parts of Louisiana and Virginia to be in rebellion against the United States; and that as a necessary war-measure he did 'order and declare that all persons held as slaves within said designated states and parts of states, are and henceforth shall be free.' As he said two years afterward, this proclamation was 'the central act of my administration, and the great event of the 19th century.' Its legal validity was indeed questioned by some, but never had a verdict passed upon it by the national courts; circumstances and the course of events fully justified it. Moreover, in 1864, Dec., Lincoln urged congress to adopt a 13th amendment to the constitution making slavery illegal and unconstitutional. This was done, 1865, Jan. 31, and before the close of the year, 27 of the 36 states of the union had ratified the amendment, which, therefore, was officially declared adopted, 1865, Dec. 18.

After the reverse at Chancellorsville the tide of success turned steadily and strongly in favor of the Federal armies, whose number, including negro troops who were now regularly enlisted, reached about a million men. The fall of Vicksburg and Port Hudson opened the Mississippi. Lee's invasion of Penn. resulted in his defeat, after a 3 days' struggle, at Gettysburg—the greatest battle of the war. It was here that, 1863, Nov. 19, at the dedication of the battle-field as a national soldiers' cemetery, Lincoln delivered, almost *extempore*, the matchless oration which soon took its place as a classic unsurpassed among addresses of the kind. Contemporary accounts vary slightly touching the precise form of the address as spoken, but the following is the version written by Lincoln a few days later while the event was fresh in his memory and with the press reports and his own manuscript before him:

'Fourscore and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty, and dedicated to the proposition that all men are created equal. Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battle-field of that war. We have come to dedicate a portion of that field as a final resting-place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this. But in a larger sense we cannot dedicate, we cannot consecrate, we cannot hallow this ground. The brave men, living and dead, who struggled here, have consecrated it far above our poor power to add or detract. The world will little note, nor long remember, what we say here, but it can never forget what they did here. It is for us, the living, rather to be dedicated here to the unfinished work which they who fought here have thus so far nobly advanced. It is rather for us to be here dedicated to the great task remaining before us—that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion—that we here highly resolve that these dead shall not have died in vain—that this nation, under God, shall have a new birth of freedom—and that government of the people, by the people, for the people, shall not perish from the earth.'

The defeat at Gettysburg was fatal to the Confederates. Their resources were failing; men and provisions were becoming scarce. The Federals were stronger than ever. Grant was made commander of their armies, and set himself pertinaciously to the capture of Richmond. Sherman was sweeping like a tornado through the very heart of the Confederacy, from the Mississippi valley to Savannah, and thence northward to meet Grant. Lee was forced out of Richmond, and surrendered at Appomattox, 1865, Apr. 9. The war was ended. The north was wild with joy. The surrender of Johnston to Sherman a few weeks later, Apr. 26, was only the inevitable consequence of Appomattox.

A glance at some of the president's diplomatic and political acts previous to this culmination is proper here. Several times during the war serious foreign complications were threatened. The arrest by Capt. Wilkes of two Confederate envoys, Mason and Slidell, on their way to England on the British steamer *Trent*, threatened our peace with Great Britain. Though public sentiment sustained Wilkes, Lincoln saw that his action had been illegal, and ordered the surrender of the prisoners. When Maximilian was set up as emperor of Mexico under the protection of French troops, our government strictly maintained its policy of non-intervention, though declaring the sympathy of its people with a Mexican republic, and that our own safety was dependent on the

maintenance of free republican institutions throughout America, at the same time accepting the assurance of France that she did not intend to overthrow or establish local government When, in 1863, France proposed a mediation between the north and south, Lincoln firmly declined to consider the proposal. Certain agents in Canada, 1864, trying to arouse sympathy for the confederacy, by conveying the impression that the south wished to treat for peace, declared themselves authorized by the Confederacy to enter into peaceful negotiations. Lincoln at once promised them safe conduct to Washington and an interview. This forced them to confess that the Confederacy had never authorized them. 1865, Feb. 3, he and Secretary Seward met three Confederate commissioners in an informal conference at Hampton Roads, at which the latter proposed a cessation of hostilities and postponement of its issues until after the expulsion of the French from Mexico by the allied forces of the north and south. Lincoln, however, insisted as the inevitable conditions of any adjustment, first, the restoration of the national authority throughout the states; second, no recession by the national government on the slavery question; and third, no cessation of hostilities until the war should be ended and all Confederate troops disbanded. This closed the conference.

In 1864, Nov., the regular presidential election was to be held. The republicans nominated Lincoln; the democrats nominated McClellan. The election showed 2,213,665 ballots cast for Lincoln, and 1,802,237 for McClellan; while of the electors 212 voted for Lincoln and only 21 for McClellan. The former was inaugurated 1865, Mar. 4.

Little more than a month after, in midst of the national rejoicing over the virtual conclusion of the war by Lee's surrender at Appomattox, a sudden chill struck the heart of the nation by the news flashed over the wires from Washington that the president had been assassinated. He had visited Grant's army, and with it entered Richmond the day after its surrender. He returned to Washington, Apr. 11, and made an address on the question of reconstructing the governments of the states lately in rebellion. On the 14th, being Good Friday, he and his wife, together with Maj. Rathbone and Miss Harris, were invited to Ford's Theatre. They occupied a private box, and Lincoln was absorbed in the play, when at about 10:30 P.M. a shot rang through the hall. The next instant John Wilkes Booth jumped down from the president's box upon the stage, brandishing a dagger, and shouting, '*Sic semper tyrannis!* The south is avenged!' rushed behind the scenes, out through the stage door, mounted a horse, and escaped into the night. The president sat motionless. The assassin's ball had pierced his brain, and he was unconscious. He was tenderly carried into a house across the street, where he died at 7 o'clock next morning, 1865, Apr. 15. Booth

had entered the president's box from the corridor behind, and unseen by any one had discharged his pistol at the back of his victim's head, the ball entering just behind the ear. Maj. Rathbone, trying to seize the murderer, had been stabbed in the arm by him. Everything was done so quickly, that before the audience knew what had happened, the assassin was gone. On the same night the attempt was made also to murder Secretary Seward at his house, where he was confined to his bed by an accident. Other prominent officials also were to have been made way with had not the plot failed. The discovery of this plot and the news of the assassination occasioned horror throughout the civilized world. The murder had been planned by a gang of irresponsible individuals, without the authority, connivance, or knowledge of those outside of their fanatical circle. Booth, who had broken his leg in jumping from the box upon the stage, was pursued and shot in a barn where he had concealed himself, 12 days after his crime. All his confederates were likewise soon brought to justice.

Next to the name of Washington there is none so deeply and lovingly enshrined in the American heart as that of Abraham Lincoln; and James Russell Lowell, in his classic essay on him, stated the simple truth when he wrote:

'A civilian during times of the most captivating military achievement, awkward, with no skill in the lower technicalities of manners, he left behind him a fame beyond that of any conqueror, the memory of a grace higher than that of outward person, and of a gentlemanliness deeper than mere breeding. Never before that startled April morning did such multitudes of men shed tears for the death of one they had never seen, as if with him a friendly presence had been taken away from their lives, leaving them colder and darker. Never was funeral panegyric so eloquent as the silent look of sympathy which strangers exchanged when they met on that day. Their common manhood had lost a kinsman.'

Consult: Lincoln's complete works, edited by Nicolay and Hay (2 vols. 1894); lives by O. J. Victor (1864), L. P. Brockett (1865), H. J. Raymond (1865), J. G. Holland (1866), W. O. Stoddard (1884), I. N. Arnold (1885), Nicolay and Hay (1890), Carl Schurz (1891), J. T. Morse (1893), N. Brooks (1894), N. Hapgood (1899), I. M. Tarbell (1900), W. E. Curtis (1903); also reminiscences by A. T. Rice (1886), F. F. Browne (1886), H. C. Whitney (1892), W. H. Herndon (1892), and W. H. Lamon (1895).

LINC'OLN, Benjamin: 1733, Jan. 24—1810, May 9; b. Hingham, Mass.: soldier. He received a common school education, and while active in public affairs, and holding the offices of magistrate, member of the provincial legislature and congress, and col. of militia, he engaged in farming till 1773. He was appointed maj.

gen. of state militia 1774; won the friendship of Washington during the siege of Boston; was chairman of the committee that prepared instructions to the representatives previous to the Declaration of Independence 1776, May; commanded the expedition which cleared Boston harbor of British vessels June; reinforced Washington after his defeat on Long Island; and took part in the battle of White Plains and the attack on Fort Independence. In 1777, Feb., he again reinforced Washington with a fresh levy of militia, at Morristown, N. J., and the same month was appointed by congress a maj. gen. in the continental army. Two months later he was surprised and nearly captured by the British at Bound Brook, N. J. After his escape he served with Washington till July, when he raised another body of New England militia, joined the movement under Schuyler against Burgoyne, seized the British posts at Lake George, broke Burgoyne's line of communication, united with Gates at Stillwater Sep. 29, took command of the right wing, and was severely wounded in the battle of Bemis's Heights Oct. 8. His wounds kept him from active service nearly a year, and lamed him for life. In 1778, Aug., he joined the army in the s., and Sep. 25 was appointed by congress its chief commander. For several months he was engaged in protecting Charleston, and in the meantime co-operated with the French troops and fleet in the assault on Savannah till the allies refused to continue operations, when he returned to Charleston. After a skilful and stubborn defense, he was forced by the superior strength of the British, to surrender the city 1780, May 12. He was exchanged early in 1781, joined Washington on the Hudson, took part in the siege of Yorktown, and was deputed by Washington to receive the sword of Cornwallis at the surrender. In 1781, Oct., he was elected by congress secretary of war, and held the office three years, after which he retired to his farm at Hingham, Mass. He commanded the Mass. militia that suppressed Shays's rebellion 1786-87; was chosen lieutenant governor of Mass. 1787; and was collector of the port of Boston 1789-1809. Lincoln was a member of numerous learned societies, and applied his last years to literary and scientific pursuits.

LINCOLN, David Francis, A.M.: American hygienist: b. Boston, Mass., 1841, Jan. 4. He was graduated at Harvard University in 1864 and at its medical school in the same year; and served as acting assistant surgeon in the United States navy during part of the civil war (1864-5). He has published *Electro-Therapeutics* (1874); *School and Industrial Hygiene* (1880); *Hygienic Physiology*, a school text-book (1893); *Sanity of Mind* (1900); etc.

LINCOLN, Jeanie Gould: American novelist: b. Troy, N. Y. She was married in 1877 to N. S. Lincoln of Washington, D. C., and has published *A Chaplet of*

Leaves, verse (1869); *Marjorie's Quest* (1872); *Her Washington Season* (1884); *A Genuine Girl* (1896); *An Unwilling Maid* (1897); *A Pretty Tory* (1899); etc.

LINC'OLN, LEVI, LL.D.: lawyer: 1782, Oct. 25—1868, May 29; b. Worcester, Mass.; son of Attor.Gen. Levi Lincoln (1749-1820). He graduated at Harvard College 1802; was admitted to the bar 1805; began practicing in Worcester; opposed the Hartford convention and drew up the legislative protest against that body 1814; was a member of the constitutional convention 1820; speaker of the assembly 1822; lieutenant governor 1823; governor 1825-34; member of congress 1835-41, collector of the port of Boston 1841-43; president of the state senate 1845; and presidential elector and first mayor of Worcester 1848. He was a member of the American Antiquarian Soc., American Acad. of Arts and Sciences, and the Mass. Hist. and Agricultural Socs.; and received the degree LL.D. from Williams College 1824 and Harvard 1826.

LINCOLN, MARY JOHNSON BAILEY: American household economist: b. South Attleboro, Mass., 1844, July 8. She was educated at Wheaton Seminary, Norton, Mass., in 1864; was married to David A. Lincoln (now dead) in 1865, and since 1879 has been prominent as a lecturer and writer on household matters. She was the first principal of the Boston Cooking School, and is the culinary editor of the *American Kitchen Magazine*. She has published *The Boston Cook Book* (1884); *Peerless Cook Book* (1886); *Carving and Serving* (1886); *The Boston School Kitchen Text Book* (1888); *What to Have for Luncheon* (1904); etc.

LINC'OLN, ROBERT TODD, LL.D.: lawyer: b. Springfield, Ill., 1843, Aug. 1; son of President Abraham Lincoln. He prepared for college at Phillips Exeter Acad., N. H., graduated at Harvard College 1864, entered the Harvard law school, and was soon afterward commissioned capt. in the army and appointed aid on the staff of Gen. Grant. He served in the field till the surrender of Gen. Lee, and after accompanying the remains of his father to Springfield, resigned his commission and resumed his law studies. After being admitted to the bar in Chicago, 1867, he practiced in Chicago till 1881, when Pres. Garfield appointed him sec. of war. This office he retained till 1885, Mar. 5, at the urgent request of Pres. Arthur, and on retiring from it resumed practice. 1889, Mar. 27, Pres. Harrison appointed him U. S. minister to Great Britain; resigned 1893; and became president of the Pullman Palace Car Co. 1897. He has declined numerous tenders of public office, including nominations for pres. and vice-pres. of the U. S. While unlike his father in many respects, he resembles him in quick penetration, deliberate reasoning, and keen judgment of human nature.

LINC'OLN COLLEGE, OXFORD: founded 1427 by Richard Fleming, Bp. of Lincoln, for a rector and 7 fellows; afterward greatly augmented by Thomas Rotherham, Bp. of Lincoln, Abp. of York, and lord high chancellor of England, who added five fellowships, and gave a new body of statutes 1479, in which the election of fellows was limited to the dioceses of Lincoln, York and Wells. These limitations have been abolished. The foundation at present consists of a rector, 10 fellows, and 14 scholars. Other scholarships are added from time to time from the proceeds of two suspended fellowships; 12 were founded by Dr. Hutchins, Lord Crewe, Bp. of Durham, and Dr. Radford, rectors. The patronage consists of nine benefices, in the counties of Oxford, Lincoln, Essex, Dorset, and Bucks, of the annual value of £5,414. Lincoln College has usually between 250 and 300 members on the books.

LINCOLN COLLEGE: established at Lincoln, Ill., in 1866, under the auspices of the Cumberland Presbyterians. It has a preparatory department, and the college courses lead to the degrees of A.B., B.S., and B.L. In 1907, there were connected with the college 14 professors and instructors and 256 students. The library had about 4,000 volumes; the grounds, buildings, and apparatus were valued at nearly $80,000; the productive funds were $103,000; and the income from productive funds, tuition, and other fees, amounted to about $9,000.

LINCOLN MEMORIAL UNIVERSITY: a coeducational institution, at Cumberland Gap, in Claiborne co., Tenn. The university was chartered in 1897, but was not opened until the buildings were in such a condition as to accommodate pupils. The situation of Cumberland Gap makes it easy of access for students from Tennessee, Virginia, and Kentucky, and it is not far distant from West Virginia and North Carolina. Prior to the opening of this school there was within a radius of 50 miles fully 250,000 people without any well-equipped college, and except in a few places, no well equipped elementary school. The plan of the work is to maintain an institution which 'shall promote research, investigation, and experiment for the extension and application of knowledge, and shall impart such instruction in the various branches of education as will tend to promote good society and good citizenship, and the ability to develop the abundant resources of the Southern States.' The plan of erecting such a school was first started by Gen. O. O. Howard, of Burlington, Vt., who desired to see a school established some place easy of access for the mountaineers of this locality, because of the great interest which Abraham Lincoln had in the people of this section. The institution comprises three departments: the academic, the normal, and the industrial. There are several grades in the academic department. In the normal department teachers are trained; and in the industrial department,

agriculture, carpentry, masonry, typesetting, and other trades, are taught to the boys and young men, and domestic science to the girls and young women.

The university owns 600 acres, and the buildings cost $150,000. They include class rooms, saw-mills, shingle-mills, shops, etc. Andrew Carnegie contributed $13,800. The present endowment fund is $200,000. By working for the school in some of the industrial departments, the students can earn their tuition and board, or at least a part of the cost of their education. In 1907, there were 14 professors, 570 students, and 6,000 volumes in the library.

LINCOLN, MOUNT: one of the peaks of the Rocky Mountains; about 8 miles northeast of Leadville. Its height is 14,297 feet. A meteorological station is on the summit, and another on the lower level (13,500 feet). A railroad has been constructed to the silver-mining works at the summit.

LINCOLNSHIRE, *-shēr:* maritime county of England; after Yorkshire, the largest in the country; bounded n. by Yorkshire, e. by the North Sea; greatest length n. to s. 75 m.; greatest breadth e. to w. 50 m.; 1,767,962 acres, or 2,762 sq.m.; pop. (1901) 436,820. The coast, from the Humber—which separates the co. from Yorkshire on the n.—to the Wash, is almost uniformly low and marshy. Lincolnshire has long been divided into three districts, or 'parts,' as they are called—viz., the Parts of Lindsey, an insular district, forming the n.e. portion of Lincolnshire, and including the Wolds or chalk hills (which are about 47 m. in length by 6 m. in average breadth); the Parts of Kesteven, in the s.w.; and the Parts of Holland, in the s.e., including the greater part of the fens. Chief rivers, the Trent, the Ancholme, the Witham, and the Welland. The surface is comparatively level, with the exception of the Wolds in the n.e. The soil, though very various, is on the whole very fertile. It includes tracts of grazing-ground unsurpassed in richness, and the 'warp-lands' along the Trent, produce great crops of wheat, beans, oats, and rape, without aid of manure. No other county in England has finer breeds of oxen, horses, and sheep. The climate, though subject to strong westerly winds, is much the same as that of the other central counties of England. Seven members are returned to parliament.

LINC'OLN'S INN: one of the four English Inns of Court, having exclusive power to call persons to the bar. It is so called because it belonged to the Earl of Lincoln in the reign of Edward II., and became an Inn of Court soon after his death, 1310. See INNS OF COURT.

LINCRUS'TA WAL'TON: embossed wall-covering, compound of various materials, chiefly linseed-oil chemically prepared and thickened into sheets (see LINOLEUM). The sheets are backed with light canvas, and

the yielding material is stamped, sometimes in high relief with a fine ornamental effect. Its original color is usually grayish; it is painted or gilded after being mounted on the wall. It is cheaper than stamped plaster, more pliable than papier-maché; and is water-proof, therefore it can be washed. It was patented in England by Frederick Walton, and was manufactured in this country first in 1882.

LINCTURE, n. *lĭngk'tūr*, or LINCTUS, n. *lĭngk'tŭs* [L. *linctus*, licked]: a medicine of the consistence of honey or treacle, to be taken by licking.

LIND, JENNY. See GOLDSCHMIDT, MADAME.

LINDAU, *lĭn'dow*, PAUL: German author: b. Magdeburg, 1839, June 3. He studied philosophy and literature at Halle, Paris, and elsewhere; in 1872 established *Die Gegenwart*, a weekly literary and political journal, and in 1878 *Nord and Süd*, a monthly. Among his earliest works were pleasantly written books of travel, *Venice* (1864); *Paris* (1865); and later *The New World* (1884). But he is better known as a playwright and novelist, his subjects being taken almost exclusively from modern life. The most successful of his plays was possibly *Maria and Magdalena*. His novels include: *Herr und Frau Bewer; Toggenburg* (1883); *Mayo*, a romance cycle; *Berlin* (1886-90); and *The Brothers* (1894). In 1895 he became manager of the court theatre at Meiningen.

LINDEN, n. *lĭn'dn*, or LIND, n. *lĭnd* [AS. and Dan. *lind;* Ger. *linde*, the linden-tree: connected with Icel. *linr*, smooth, soft, referring to the wood]: the lime-tree. See LIME.

LINDLEY, *lĭnd'lĭ*, JOHN: botanist: 1799, Feb. 5—1865, Nov. 1; b. Catton, near Norwich, England, where his father, author of *A Guide to Orchard and Kitchen Gardens*, owned a large nursery garden. In 1819, Lindley published a translation of Richard's *Analyse du Fruit;* and 1820, *Monographia Rosarum*. Among his most important works are *Introduction to the Natural System of Botany* (1830); *Introduction to the Structure and Physiology of Plants* (2 vols. 1832); *Flora Medica* (1838); and *The Vegetable Kingdom* (1846), standard work on the subject of classification, an expansion of his *Introduction to the Natural System*, which had previously (1836) been remodelled under the title, *A Natural System of Botany*. Lindley did much to popularize botany by his *Ladies' Botany, School Botany*, 'Botany' in the *Library of Useful Knowledge*, etc. His other works, and his contributions to scientific transactions were numerous. In 1829, at the opening of the London Univ., he was appointed professor of botany, and he continued in that post 31 years, resigning 1860. He was a fellow of numerous learned societies in England and elsewhere.

LINDSAY, *lĭn'zā:* Canada, the capital of Victoria co., Ontario, a town and port of entry on the navigable Scugog river, and on the Grand Trunk railway, 57 miles northeast of Toronto. The town is well built, chiefly of brick, has a large trade in lumber and grain, and is the seat of a United States consular agent. It has lumber- and flour-mills, foundries, tanneries, breweries, and manufactories of carriages, agricultural implements, sash, doors, and blinds, woolens, boots and shoes, woodenware, etc. Lindsay has fine county buildings, schools, and churches, banks, and weekly newspapers. Pop. (1901) 7,003.

LINDSAY, *lĭn'zā,* Anna Robertson Brown, m.a., ph.d.: American author: b. Washington, 1864, Feb. 20. She was graduated from Wellesley in 1883, subsequently studied mediæval literature at Oxford University, and was married to S. M. Lindsay (q.v.) in 1896. She has published: *What is Worth While?* (1893); *The Victory of Our Faith* (1895); *Culture and Reform* (1896); *Giving What We Have* (1897); *What Good Does Wishing Do?* (1898); *The Warriors* (1903); *Hymn before Election* (1906); *The Spiritual Care of a Child* (1907); etc.

LINDSAY, Charles: Canadian author: b. Lincolnshire, Eng., 1820; came to Canada in 1841 and entered upon journalistic career; was editor of the Toronto *Examiner;* appointed Registrar of Deeds, Toronto, 1867. Published works include: *The Clergy Reserves: Their History and present Position* (1851); *Prohibitory Laws in the United States* (1855); *The Prairies of the Western States* (1860); *Life and Times of William Lyon Mackenzie* (1862); *An Investigation into the unsettled Boundaries of Ontario* (1873); *Rome in Canada: or the Ultramontane Struggle for Supremacy* (1878).

LIND'SAY, or Lynd'say, Sir David, of the Mount: one of the best, and long the most popular of the older Scottish poets; said to have been b. about 1490; d. before the summer of 1555; son of David Lindsay of Garmylton, E. Lothian, whose grandfather was a son of Sir William Lindsay of the Byres. Laing in his recent edition of Lyndsay (1871) notes the absence of evidence as to date of birth, Chalmers having apparently assumed it as a consequence of his supposition that the poet's father was 'David Lyndsay of the Mountht,' while Laing has shown that this was the poet's grandfather. The name 'Da Lindesay' occurs in the list of 'incorporated' students in St. Salvator's College, St. Andrews, for 1508 or 9: it may be that of the poet. It is not known when he entered the royal service, but 1511, Oct., he is found taking part in a play acted before the court of King James IV. In the following spring, he was appointed 'keeper' or 'usher' of the prince, who, when little more than a twelvemonth old, became King James V.; and his verses preserve some pleasing traces of the care

and affection with which he tended the king's infant years. His wife, Janet Douglas, had long the charge of the royal apparel. In 1524, the court fell under the power of the queen-mother and the Douglases, and Lindsay lost his place; but four years afterward, when the Douglases were overthrown, Lindsay was made lion king-at-arms, and received knighthood. In this capacity he accompanied embassies to the courts of England, France, Spain, and Denmark. He appears to have represented Cupar in the parliaments of 1542 and 3; and he was present at St. Andrews 1547, when the followers of the reformed faith called Knox to take upon himself the office of a public preacher. He died childless.

The first collection of Lindsay's poems appeared at Copenhagen about 1553. They were republished at Paris or Rouen 1558; London 1566,75, and 81; at Belfast 1714; in Scotland 1568,71,74,88,92,97, 1604,10,14,34,48,96, 1709, 20, and 76. This enumeration of editions shows Lindsay's great popularity. For nearly two centuries, indeed, he was what Burns has since become—the poet of the Scottish people. His works were in almost every house, his verses on almost every tongue. Like Burns, he owed part of his popularity, no doubt, to his complete mastery of the popular speech. But, like Burns, Lindsay would have been read in whatever language he chose to write. His verses show few marks of the highest poetical power, yet their merits are great. Their fancy is scarcely less genial than their humor, and they are full of good sense, varied learning, and knowledge of the world. They are valuable now, if for nothing else than their vivid pictures of manners and feelings. In the poet's own day, they served a nobler purpose by preparing the way for the great revolution of the 16th century. It has been said that the verses of Lindsay did more for the Reformation in Scotland than all the sermons of Knox. Like Burns, Lindsay shot some of his sharpest shafts at the clergy. The licentiousness that characterizes his verse must be attributed in part to the age in which he lived. The earliest and most poetical of his writings is *The Dreme;* the most ambitious, *The Monarchie;* the most remarkable in his own day, perhaps, was *The Satyre of the Thrie Estaitis;* but that now read with most pleasure, both for the charm of its subject and for its freedom from the allegorical fashion of the time, is *The Historie of Squyer Meldrum.* An admirable ed. of Lindsay's works is that of Chalmers (Lond. 1806, 3 vols.); but in points of detail it is less accurate than that of David Laing (3 vols. 1879).

LINDSAY, Samuel McCune, ph.b., ph.d.: American political economist and educator: b. Pittsburg, Pa., 1869, May 10. He was graduated from the University of Pennsylvania in 1889, and took post-graduate courses there and abroad. After his return to the United States he was appointed assistant professor of sociology at the

University of Pennsylvania; he has also been editor of the department of sociological notes in the *Annals of the American Academy of Political and Social Science* (1895-1901), and associate editor of the *Annals.* In 1892 he was special agent of the United States Senate Finance Committee to report on wholesale prices in Europe; in 1899-1900 was expert of the Industrial Commission to report on railroad labor; and from 1902-4 was commissioner of education to Porto Rico, being granted leave of absence from the University of Pennsylvania. He is now professor of social legislation, Columbia University. He has written *Railway Labor in the United States* (1902); *Social Work at the Krupp Foundries; The Study and Teaching of Sociology; The Unit of Investigation in Sociology;* and other articles in the *Annals of the Academy of Political and Social Science; Report on Education in Porto Rico;* and other monographs.

LINDSAY, WILLIAM: American lawyer: b. Rockbridge co., Va., 1835, Sep. 4. He was educated in his native state; removed in 1854 to Clinton, Hickman co., Ky., where, after teaching school and studying law, he was admitted to the bar in 1858. Throughout the civil war he served in the Confederate army, rising to the rank of captain and acting as a staff officer, and after the war returned to Clinton and resumed the practice of law. In 1867 he was elected state senator as a democrat; in 1870 took his seat on the bench of the supreme court of Kentucky; and was chief justice of the state 1876-8, declining a renomination and returning to the practice of law at Frankfort. In 1889 he again entered the state senate; in 1893 served as commissioner of the World's Columbian Exposition; in the same year was elected to the United States senate for the unexpired term of John G. Carlisle, who had resigned to become secretary of the treasury; and in 1894 he was reëlected, but differed from his party on the money question, and toward the end of his term usually voted with the republicans. After leaving the senate he went to New York city and once more resumed the practice of law. In 1901 he was appointed by President McKinley a commissioner for the Louisiana Purchase Exposition at St. Louis.

LINDSBORG, *lĭnz'bôrg:* city in McPherson co., Kan., on the Smoky Hill river, and on the Missouri Pacific and the Union Pacific railroads; about 115 m. s.w. of Topeka, and 64 m. n. by w. of Wichita. It is in an agricultural region, and its trade is chiefly in live-stock, grain, broom-corn, flour, and dairy products. It has large brick and lumber yards and grain elevators. An important industrial establishment is the Bethany Book Concern, the Western publishing institution for Lutheran literature. There are a number of Swedish Lutherans in Lindsborg. It is the seat of Bethany College, opened

in 1881 under the auspices of the Lutherans. Among its departments, that of music is well known for its annual concerts, when the students render the *Messiah*. Pop. 1,300.

LINDSLEY, *lĭnz'lĭ*, JOHN BERRIEN: American educator: b. Princeton, N. J., 1822, Oct. 24; d. 1897, Dec. 7. He was graduated from the University of Nashville in 1839 and received his degree in medicine at the University of Pennsylvania. Studying theology, he was ordained to the Presbyterian ministry in 1846 and preached for several years. He became professor of chemistry in the University of Nashville in 1850, and was chancellor of the institution 1853-73. He was likewise professor of chemistry in the University of Tennessee 1880-97, and of materia medica in the Tennessee College of Pharmacy 1896-7. He published *Our Ruin: its Causes and Cure* (1868); *The Military Annals of Tennessee* (1886).

LINE, n. *līn* [F. *ligne*, a line—from L. *linĕă*, a line—from *linum*, flax: It. *linea*]: length without breadth; a string or cord; a lineament or mark in the hand or face; outline; as much as is written from the one margin to the opposite one; a straight mark in writing; a single row; a series or succession; course or direction, as the line of a street; a short note; in *poetry*, a verse or part of a verse containing the number of feet in a measure; family ascending or descending; kind of business; twelfth part of an inch; a body of men in either one or two ranks drawn up in one row; stoppage or separation, as the line must be drawn somewhere: in *math.*, a magnitude having only one dimension: V. to mark with lines. LI'NING, imp.: N. the act of marking with lines. LINED, pp. *līnd:* ADJ. traced out; striated. THE LINE, the equator or equinoctial circle: also applied to the largest war-ships, as a ship of *the line*, that is, of the line of battle. LINER, n. *lī'nėr*, one of a regular line of trading or passenger ships, generally steam-vessels. LINES, n. plu. *līnz*, intrenchments; a connected series of military works thrown up; delineation or outlines of the intended vessel supplied to the ship-builder; fundamental principles; boundary; place of abode; in *Scrip.*, lot or destiny. CLOTHES-LINES, stretches of suspended ropes on which wet washed clothes may be hung to be dried. HARD LINES, unfortunate fate or lot. LINE OF BATTLE, disposition or order of ships or soldiers in an engagement. LINE-OF-BATTLE SHIP, *formerly*, a vessel fitted by its size, construction, and armament to take up a position in a naval engagement. OFFICERS OF THE LINE: in the military, naval, and militia services of the United States, officers are classed as general, general staff, commissioned, non-commissioned, line, and warrant officers. When an army battalion is drawn up in order of battle, the colonel is in advance of the centre of the line, surrounded by his staff. In his rear stand the non-commissioned staff, and between them and the line of men

stand the line officers stretched along the entire front; the adjutant on the extreme right, and then the lieutenant-colonel, junior major, senior major, and sergeant-major (on the extreme left), in this order. In the navy, warrant officers are boatswains, gunners, carpenters, and sailmakers, whose promotion or reward for special services is by warrant, not commission. TROOPS OF THE LINE, the regular cavalry and infantry regiments as distinguished from the guards, artillery, and engineers: 'the line' were probably so named as constituting the usual 'line of battle.' LINE MEN, men employed along the permanent way of a railway, or telegraph line. HORIZONTAL LINE, a line parallel to the horizon. VERTICAL LINE, a line standing upright, or at right angles to a horizontal line. PARALLEL LINES, lines equidistant from each other at all points. LINE OF BEAUTY, a term attributed to Hogarth who intended by it a certain serpentine curved line which he considered the most beautiful form of line. LINE OF DEFENSE, in *mil.*, the line of fire of the flank of a bastion; the line of the face of a bastion produced until it meets the corner of the curtain angle; a particular method employed in argument in order to justify or to clear from guilt. LINE OF DEMARKATION, the line dividing the lands of different proprietors. LINE OF DIP, in *geol.*, the direction in which strata dip or incline from the horizon, or from the level. LINE OF FIRE, the direction in which the shot from the guns of a battery are to be projected. LINE OF MARCH, course or direction taken, as by an army. LINE OF OPERATIONS, in *mil.*, the different points operated upon, and over which an army passes in attaining its object. LINE OF REGARD, in *optics* the line connecting the fixation point at which the eye is looking with the centre of rotation of the eye. LINE OF SIGHT, in *optics* the line joining the fixation point of the eye with its fovea, i.e. point of clearest vision. RIGHT LINE, the shortest line that can be drawn between two points. ON THE OLD LINES, on the old methods or fundamental principles; in the same course or direction as before. TO READ BETWEEN THE LINES, to see a meaning intended to be conveyed, not apparent to a casual reader, as if written in the spaces between.

LINE, v. *līn* [Gael. *luain*, the loins; *lion*, to fill; to replenish: comp. L. *linĕă*, a linen thread, a line of descent]: in *prov. Eng.* and *Scot.*, to impregnate, applied to dogs, swine, horses, and other quadrupeds. LI'NING, imp. LINED, pp. *līnd*. *Note.*—This word may be a mere adaptation from LINE 3.

LINE, v. *līn* [prov. Sw. *lina*, to double a garment by putting linen inside: L. *linum*, flax, linen]: to cover the inside of a garment, originally with linen, but now with any other texture; to cover on the inside; to strengthen with a guard within; to strengthen with anything added. LI'NING, imp. covering on the inside: N. the inside cover-

ing of anything. LINING UP, the introduction of packing pieces under bearings to compensate for wear. LINED, pp. *līnd*, covered on the inside.

LINEAGE, n. *lĭn'ĕ-āj* [F. *lignage*, lineage—from mid. L. *lineat'ĭcum;* F. *ligne*, a line—from L. *linĕă*, a line]: descendants in a line from a common progenitor; race; progeny.

LINEAL, a. *lĭn'ĕ-ăl* [L. *linĕālis*—from *linĕă*, a line]: composed of lines, as lineal measure; of or relating to a line or length; in a direct line from an ancestor, e.g., as from father to son, grandson, etc.; hereditary. LIN'EALLY, ad. *-lĭ*. LINEAMENT, n. *lĭn'ĕ-ă-mĕnt* [F. *linéament*—from L. *linĕamen'tum*, a drawing, a delineation]: feature; outline. LIN'EAMENTS, n. plu. *-mĕnts*, distinguishing marks in the form of the face. LIN'EAR, a. *-ĕ-ėr* [L. *linĕāris*]: consisting of lines; having the form of lines; in *bot.*, having very narrow leaves much longer than broad. In *math.*, the equation of a straight line is of the first degree, hence the term linear is applied to equations, expressions, transformations, etc., of this degree. LIN'EARLY, ad. *-lĭ*, with lines; in *bot.*, applied to very narrow leaves in which the length greatly exceeds the breadth. LINEAR MEASURES, those measures which have relation to length only. LINEAR PERSPECTIVE, that which regards only the forms, magnitudes, and positions of the objects delineated, in reference to the vanishing-point: see LINE 1 and 2.

LINEATE, a *lĭn'ĕ-āt* [L. *linĕātus*, drawn in outline—from *linĕă*, a line]: in *bot.*, applied to a leaf marked lengthwise with depressed lines. LINEOLATE, a. *lĭn'ĕ-ō-lāt*, in *bot.*, marked longitudinally with fine lines.

LINEN, n. *lĭn'ĕn* [L. *linum;* Ger. *lein;* Icel. *lin*, flax: comp. Gael. *lin*, a thread of flax—from *lion*, flax or lint: W. *llin*]: a cloth made of flax; underclothing; a general term for the sheets, table-cloths, towels, etc., of a house. ADJ. made of linen. LINEN-DRAPER, one who sells linen cloth.—The manufacture of linen has reached its greatest perfection in France and the Netherlands, where the stimulus to produce fine yarns (see SPINNING) for the lacemakers has turned such care and attention to the cultivation and preparation of flax, that in fineness of fibre they have been unequalled. The linens of France, Belgium, and Holland have long had high repute, and in lawn, the finest kind of linen-cloth made, the French are unrivalled. In the ordinary kinds of linen, British and American manufacturers are rapidly improving, and will soon equal in quality the productions of continental competitors. Those of Ireland, especially, are remarkable for excellence, and this trade has become a very important one in that country; while in Scotland a large trade in the coarser and inferior kinds has located itself. The manufacture was introduced into the United States 1834 at Fall River, Mass. Jute is now largely cultivated

as a substitute for hemp and flax in the manufacture of low-priced linen goods. The manufacture of linen in the United States has not made extensive progress owing to the general use of cotton fabrics, which can be produced with greater ease and less expense, and answer more purposes than linen cloth. The increase, however, in the last ten years has been considerable, particularly in the manufacture of towels and toweling. For linen thread and carpet yarns there is also a large demand.

The chief kinds of linen goods (for yarn, see SPINNING) are: LAWN (Fr. *linon*), the finest of flax manufactures, formerly exclusively a French production, but very fine yarns are now made in Belfast, Armagh, and Warringstown; CAMBRIC (q.v.); DAMASK (q.v.); DIAPER (q.v.). Of the finer plain fabrics, *Sheetings* are important: they are largely made at Belfast, Armagh, and Leeds. Common *Sheeting* and *Towelling* are extensively manufactured in Scotland, particularly at Dundee, Kirkcaldy, Forfar, and Arbroath. *Ducks, Huckabacks, Osnaburgs, Crash,* and *Tick* (corrupted from *ticken* and *dekken,* Dutch for cover), are very coarse and heavy materials, some fully bleached, others unbleached, or nearly so: they are made in Scotland, the great seat of the manufacture being at the towns above mentioned. A few varieties of velvet and velveteen also are made of flax at Manchester, and much linen-yarn is used as warp for other materials.

Linen is one of the most ancient of all textile manufactures, at least, one of the earliest mentioned. The cerecloth, in which the most ancient mummies are wrapped, proves its early and very extensive use among the Egyptians. It formed parts of the garments of the Hebrew as well as the Egyptian priests. Panopolis was the Belfast of the ancients, as, according to Strabo, the manufacture of linen was conducted chiefly there. The wonderful durability of linen is evidenced by its existence on mummies, and by the remarkable fact mentioned by the German writer, Seetzen, and referred to by Blumenbach, that he had found several napkins within the folds of the covering on a mummy which he unwrapped, and that he had them washed several times without injury, and used with great veneration 'this venerable linen, which had been woven more than 1,700 years.' From the time of these ancient Egyptians up to the present period, the use of linen for clothing and other purposes has been continuous; and though the introduction and vast development of the cotton manufacture checked its consumption for a time, it has fully regained, and has indeed in some countries exceeded, its former proportions as one of the great staples.

LINEOLA, n. *lĭn-ē′ō-la* or *-ā′ō-lă* [LL., dim. of L. *linea*]: in *anat.* and *zool.,* a delicate line; especially, one of the lines on the distended breast where the lobes separate. LINEOLATE, a. *lĭn′ē-ō-lat* or *-lāt:* minutely lineate.

—LINEOLET, n. *-let:* in *entom.*, a delicate line. LINEO-LINEAR, a. *-lĭn'ē-ăr* [from L. *linea* plus *linear*]: in *math.*, designating a function that is linear as to each of two sets of variables.

LINER, n. *lī'nėr:* I. A vessel belonging to a steamship line; one who draws or paints lines, as in decoration; a line-of-battle ship; in *Baseball*, a ball batted or thrown with force horizontally; a marble or ball that stops on a partition-line in a game. II. One who makes linings; a plain movable jar fitting inside an ornamental vessel; a long stone slab to which small stones are fastened to be polished; in *mach.*, a thin piece placed between two others to adjust them, a shim; a lining, as of a cylinder, also a cylinder within another cylinder.

LINES, MAGNETIC: the same as magnetic lines. See MAGNETISM.

LING, n. *lĭng* [Icel. *ling;* Dan. *lyng*, any small shrub, heather]: common heather; heath; the *Callūna vulgāris*, ord. *Ericācĕœ*. See HEATH.

LING, n. *lĭng* [Icel. *langa*, ling—from *langr*, long: Dan. *lange;* Dut. *leng*, a ling: Ger. *lang*, long], (*Lota molva*): fish of the cod kind, having a slender body and a flattish head. It is of the family *Gadidæ*, abundant on parts of the n. Atlantic coasts, especially of the German Ocean; found also on the banks of Newfoundland. The ling is generally 3 or 4 ft. long, sometimes 5 or 6 ft., and has been known to weigh 70 pounds. The color is gray, inclining to olive; the belly, silvery; the fins edged with white. The tail-fin is rounded. The gape is large, and the mouth well furnished with teeth. The ling is very voracious, feeding chiefly on smaller fishes. It is also very prolific, and deposits its spawn in June, in soft oozy ground near the mouths of rivers. It is found chiefly where the bottom of the sea is rocky. Great numbers are caught on the coasts of Cornwall, the Hebrides, the Orkney and Shetland Islands, etc.; and sent to the market in the form of *Stockfish*. The name ling is applied also to the Cobia, the Pacific cod, two Hakes, the Congo eel, and Burbot (q.v.).

LINGA, n. *lĭng'gă* [Sanskrit word which literally means a sign or symbol]: in the worship of the Hindus, the *phallus*, as emblem of the male or generative power of nature. The linga worship prevails with the S'aivas, or adorers of S'iva (see INDIA, Hindu Religion). Originally of an ideal and mystical nature, the worship has degenerated into the grossest practices; thus taking the same course as the similar worship of the Chaldæans, Greeks, and other pagan nations: see GROVE. The manner in which the linga is represented is generally inoffensive—the pistil of a flower, a pillar of stone, or other erect and cylindrical objects, being held as appropriate symbols of the generative power of S'iva. Its counterpart is *Yoni*, or the symbol of female nature as fructi-

fied and productive. The S'iva-Purâna names 12 Lingas which seem to have been chief objects of this worship in India.

LINGAN, James Maccubin: about 1752-1812, July 28; b. Md.: soldier. He obtained a commission in the army at the beginning of the revolutionary war; was engaged in the battles of Long Island, York Island, and Fort Washington; was taken prisoner in the latter fight, and confined a long time in a British prison-ship. He attained the rank of brigadier-general, and after the war he was appointed collector of the port of Georgetown, D. C. In 1812 he aided in defending the office of the *Federalist* in Baltimore against a mob, and was killed in the jail where he had sought refuge.

LINGARD, *lĭng'gĕrd*, John, d.d., ll.d.: Roman Catholic historian of England: 1771, Feb. 5—1851, July 17; b. Winchester, of humble parentage. Being intended for the priesthood, he was sent to the English College of Douai, France, where he remained till that college, in common with most of the religious establishments of France, was broken up by the Revolution. The act called the Rom. Cath. Relief Act enabled Rom. Catholics to open schools in England and the Douai community was transferred to Crookhall, and ultimately to Ushaw, in Durham. Lingard continued attached to the college in its several migrations, though not always resident. In 1793, he accepted the office of tutor in the family of Lord Stourton; but in the following year he returned to complete his theological studies at Crookhall, where he entered into priest's orders, and in which he continued as prof. of philosophy, prefect of studies, and vice-pres., until 1810, when he was named president. In 1811, however, he accepted the humble cure of Hornby, near Lancaster, in which he continued to reside till his death. Lingard's first important work was *Antiquity of the Anglo-Saxon Church* (8vo., 1806), reprinted 1810, afterward, in much enlarged edition (2 vols. 1845). This was the pioneer of what became eventually the labor of his life—*History of England* (6 vols. 4to), published at intervals, 1819-30; afterward 14 vols. 8vo, 1823-31. This work, before the death of the author, had passed through six editions, the last (10 vols. 8vo.) 1854-5.

LINGAYÉN, *lĭn-gâ-yān:* a pueblo and the capital of the province of Pangasinán, Luzon, Philippines, situated on an island of the delta of the Agno river, formed by one of the outlets of the river and the Gulf of Lingayén. It has a fine parish church and the buildings generally are well constructed, many being of stone. The Manila and Dagupan railroad has a station within 8 m. at Dagupan, and Lingayén is the converging point of several important highways and has frequent communication by water with Manila. It has therefore an important trade. Pop. 18,900.

LINGAYÉN, GULF OF: an arm of the China Sea indenting the western coast of the island of Luzon, Philippines, n. of Manila Bay. The width of the entrance from San Fernando Point to Santiago Island is 20 m. The e. coast is mountainous; the w. coast is generally level and less elevated and is fringed by low wooded islands, the channels between which are navigable for native coasters. Typhoons are prevalent in September and October.

LINGEL, n. *lĭng'gĕl* [L. *lingŭlă;* F. *ligule,* a little tongue]: a little tongue or thong of leather.

LINGEL, n. *lĭng'gĕl* [F. *ligneul,* shoemakers' thread—from F. *ligne;* L. *linĕă,* a line]: shoemakers' thread.

LINGER, v. *lĭng'gėr* [AS. *lengra,* longer—from *lang,* long: Icel. *langr,* long: Dut. *lengen,* to lengthen: F. *languir,* to droop, to linger]: to delay; to loiter; to be slow in action or decision; to be protracted; to remain long in any condition; in *OE.,* to delay the gratification of; to defer. LIN'GERING, imp.: ADJ. protracted; drawing out in time; delaying: N. a delaying; a remaining long. LIN'GERED, pp. *-gėrd.* LIN'GERER, n. *-ėr,* one who. LIN'GERINGLY, ad. *-lĭ.*—SYN. of 'linger': to lag; saunter; tarry; stop; hesitate; wait; remain; continue; protract.

LINGO, n. *lĭng'gō* [L. and It. *lingua,* tongue]: in *slang,* talk; language; speech.

LINGTHORN, n. *lĭng'thŏrn* [L. *lingua,* tongue, and Eng. *thorn*]: a British star-fish having five arms or rays.

LINGUADENTAL, a. *lĭng'gwă-dĕn'tăl* [L. *lingua,* a tongue, and *dens* or *dentem,* a tooth]: formed or uttered by the joint action of the tongue and teeth, as *d* and *t:* N. a sound formed by the tongue and teeth; the letter representing the sound.

LINGUA FRANCA, *lĭng'gwă frăng'kă* [It. *Língua Francése,* tongue French]: corrupt Italian speech, mixture of Italian and French words and idioms, spoken chiefly in the coast towns of the Mediterranean.

LINGUAL, a. *lĭng'gwăl* [L. *linguālis*—from *lingua,* tongue]: pertaining to the tongue; formed by the tongue. LIN'GUALLY, ad. *-lĭ.* LIN'GUIST, n. *-gwĭst,* a person skilled in languages. LINGUIS'TIC, a. *-gwĭs'tĭk,* relating to languages, or to the affinities of languages. LINGUIS'TICS, n. plu. *-tĭks,* the science of languages; the general study of languages for the purpose of classification (see PHILOLOGY). LIN'GUIFORM, a. *-gwĭ-fawrm* [L. *forma,* a shape]: tongue-shaped.

LINGUET, n. *lĭng'gĕt* [F.]: a tongue; a languet; the piece of a sword-hilt which turns down over the mouth of the scabbard.

LINGULA, n. *lĭng'gū-lă* [L. *lingŭla,* a little tongue]: genus of brachiopodous mollusca; exhibiting the remarkable peculiarity of a long fleshy pedicle supporting

a bivalve shell, and passing between the beaks of the valves. They live attached to rocks in the seas of warm climates, particularly of the Indian archipelago and Polynesia. The genus is interesting, because, though few recent species are known, fossil species are numerous, and are found in the fossiliferous beds of Britain, and other countries, whose seas now produce none of their congeners. LIN'GULATE, a. *-gū-lāt*, tongue-shaped. LINGULIFORM, a. *lĭng-gū'lĭ-fawrm* [L. *forma*, shape]: tongue-shaped.

LINIMENT, n. *lĭn'ĭ-mĕnt* [F. *liniment*—from L. *linimen'tum*, an ointment—from *linĕrĕ*, to besmear], an oily composition for rubbing into the skin; a balsamic lotion. Liniments may be regarded, so far as their physical properties are concerned, as ointments having the consistence of oil, while, chemically, most of them are *soaps*—i.e., compounds of oils and alkalies. In consequence of their slighter consistence, they are rubbed into the skin more readily than ointments. Among the most important are: *Liniment of Ammonia*, popularly known as *Hartshorn and Oil*, prepared by mixing and shaking together solution of ammonia and olive-oil, and employed as an external stimulant and rubefacient to relieve neuralgic and rheumatic pains, sore throat, etc.: *Soap Liniment*, or *Opodeldoc*, whose constituents are soap, camphor, and spirits of rosemary, used in sprains, bruises, rheumatism, etc.: *Liniment of Lime*, or *Carron Oil*, which is prepared by mixing and shaking together equal measures of olive oil or linseed oil and lime-water; an excellent application to burns and scalds, named from its general employment for this purpose at the Carron ironworks: *Camphor Liniment*, camphor dissolved in olive-oil, used in sprains, bruises, and glandular enlargements, and not to be confounded with *Compound Camphor Liniment*, which contains considerable ammonia, and is a powerful stimulant and rubefacient: *Opium Liniment*, which consists of soap liniment and tincture of opium, much employed as an anodyne in neuralgia, rheumatism, etc., and the *Simple Liniment* of the Edinburgh Pharmacopœia composed of four parts of olive-oil and one part of white wax, used to soften the skin and promote the healing of chaps.

LINK, n. *lĭngk* [Icel. *hlekkr*, a chain: Norw. *lekk*, a link; *lekkja*, a chain: Dan. *lænke*, a chain: Sw. *länk*, a link: Ger. *gelenk*, a joint]: a single ring of a chain; anything doubled and united at the ends; a single part of a connected series; a division of the chain used in surveying and land measuring, equal to 7.92 inches long; anything which serves to connect or bind: V. to unite or connect as by a link; to be joined or connected. LINK'ING, imp. LINKED, pp. *lĭngkt:* ADJ. connected by links. LINK-MOTION, an apparatus for reversing steam-engines.

LINK, n. *lĭngk* (seemingly from Gris. *liangia*, a sausage—from *liar*, a tie]: a sausage.

LINK, n. *lĭngk* [Dut. *lonte* or *lompe*, a gunner's match of twisted tow: Sw. *lunta;* Dan. *lunte*, a match]: a torch of pitched rope or paper. LINK-BOY, or LINKEY, n. *lĭngk'kĭ*, the bearer of a light or torch in foggy weather, or in dark nights. See LINSTOCK.

LINKS, n. plu. *lĭngks* (Norw. *lekk*, a ring: prov. Sw. *lynka;* Icel. *lykkja*, a crook, a twist: Ger. *lenken*, to bend, to turn: Lith. *linkes*, bent]: in *Scot.*, the windings of a river—the radical image of the word seeming to be a crook or bending; the rich lands among those windings; golf-grounds; flat ground on the sea-shore; any sandy, barren ground; locks of hair or curls.

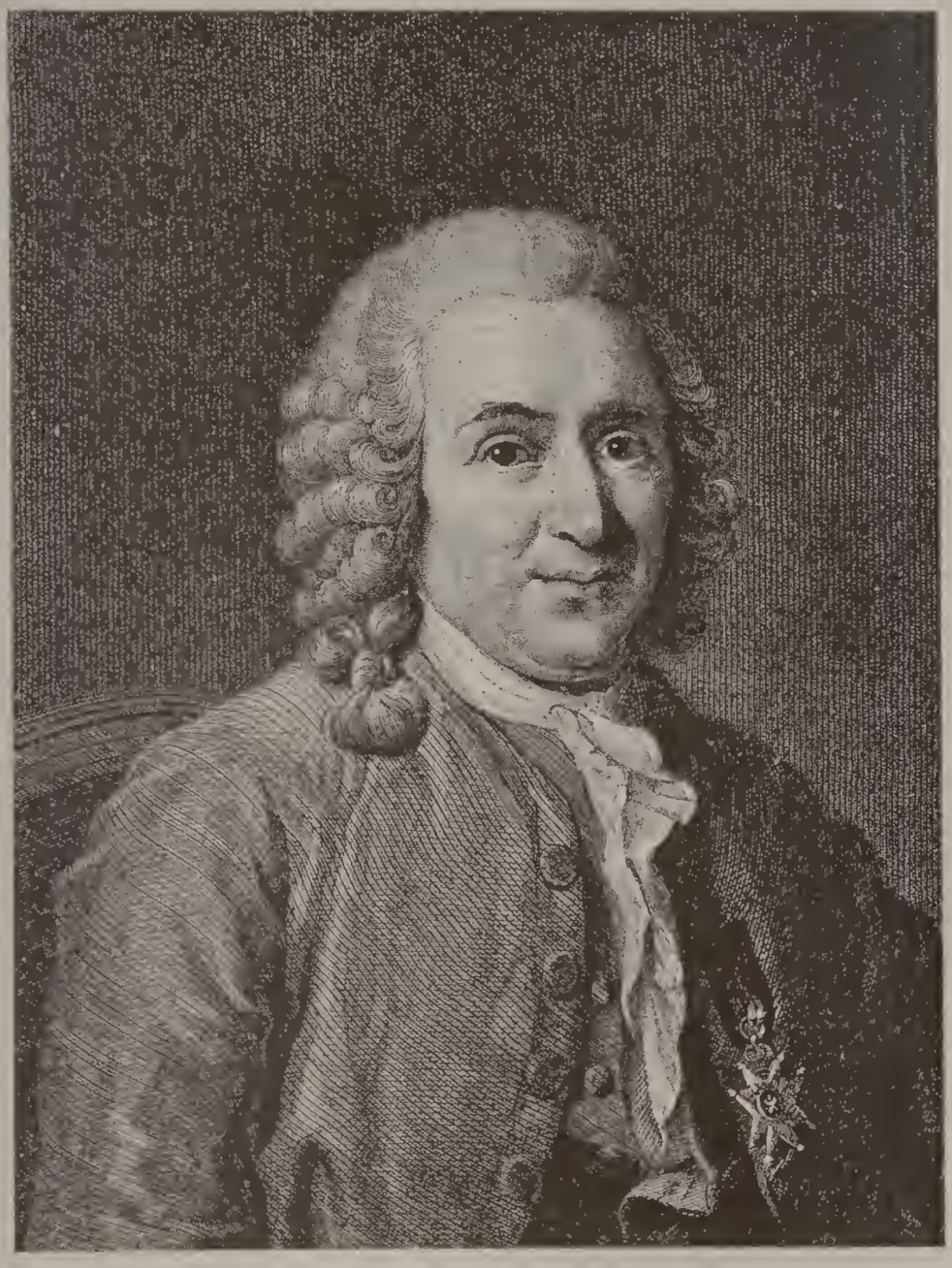
LINN, JAMES WEBER: American author and educator; b. Winnebago, Ill., 1876, May 11. He was graduated from the University of Chicago in 1897 and since 1899 has been instructor there. He has published *The Second Generation*, a novel (1902); *The Chameleon* (1903).

LINN, WILLIAM ALEXANDER: American journalist: b. Sussex, N. J., 1843, Sep. 4. He was graduated at Phillips Academy, Andover, Mass., in 1864, at Yale in 1868, and in 1883 was admitted to the New York bar. From 1868 to 1891 he was engaged in newspaper work, during part of that time being on the staff of the New York *Tribune*, and was managing editor of the *Evening Post*, 1891-1900, resigning to devote himself to literary work. He was a member of the New Jersey commission of 1899, by which, together with the Interstate Commission, of which he is a member, the passage and enforcement of laws for the prevention of the destruction of the Palisades were secured. He is a contributor to agricultural and horicultural papers, and has also written *The Story of the Mormons* (1902); *Rob and His Gun* (1902); and *Horace Greeley* (1903).

LINNÆAN, a. *lĭn-nē'ăn:* pertaining to *Linnæus*, great Swedish naturalist, or to his system.

LINNÆ'US. See LINNÉ.

LINNÉ, *lĭn-nā'*, KARL VON (better known as CAROLUS LINNÆUS): one of the greatest of naturalists: 1707, May 13 (o.s.)—1778, Jan. 10; b. Rashult, in Smaland (Sweden), where his father was a country parson in very poor circumstances. His parents intended him for his father's profession, but he made little proficiency in the necessary classical studies, manifesting, however, from boyhood, the greatest love for botany. His father, disappointed, proposed to apprentice him to a shoemaker, but a friend, Dr. John Rothmann, physician at Wexiö, undertook for a year the expense of his education, and guided him in the study of botany and of physiology. In 1727, the young naturalist went to study medicine at Lund, and in the year following he went to Upsala, but during his attendance at the university he endured great poverty, being often dependent on chance generosity for a meal, and repairing his worn shoes with folded paper.



LINNÆUS.

Olaf Celsius received him at last into his house, and availed himself of his assistance in preparing a work on the plants of the Bible. He also won the favorable regard of Olaf Rudbeck, professor of botany at Upsala, by a paper in which he exhibited the first outlines of the sexual system of botany, with which his name must ever remain connected. Rudbeck appointed him curator of the botanic garden and botanical demonstrator. In his 24th year he wrote a *Hortus Vplandicus*. 1732, May-Nov., he travelled in Lapland, at the expense of the government: the fruits of his tour appeared in *Flora Lapponica* (Amst. 1737), He afterward spent some time at Fahlun, studying mineralogy, and there became acquainted with the lady whom he afterward married, the daughter of a physician named Moräus, who supplied him with the means of going to Holland to take his degree, which he obtained at Harderwyck 1735. In Holland, he became the associate of some of the most eminent scientific men of the time, and won high repute as a naturalist, developing original views which attracted much attention, while he eagerly prosecuted his researches in all departments of natural history. During his residence in Holland, Linné composed and published, in rapid succession, some of his greatest works, particularly *Systema Naturæ* (Leyd. 1735), *Fundamenta Botanica* (Leyd. 1736), *Genera Plantarum* (Leyd. 1737), *Corollarium Generum Plantarum* (Leyd. 1737), etc. He visited England and France, and returned to Sweden, where, after some time, he was appointed royal botanist and pres. of the Stockholm Acad.; 1741, professor of medicine in Upsala; 1742 professor of botany there. The remainder of his life was spent mostly at Upsala in the greatest activity of scientific study and authorship. He produced revised editions of his earlier works, and numerous new works, *a Flora Suecica* (1745), *Fauna Suecica* (1746), *Hortus Upsaliensis* (1748), *Materia Medica* (1749-52), his famous *Philosophia Botanica* (1751), and *Species Plantarum* (1753), in some respects the greatest of all his works. In 1755, Linné was invited by the king of Spain to settle in that country, but declined. In 1761 a patent of nobility was granted him by the Swedish government. His memory began to fail at the age of 60, and the last four years of his life were spent in great mental and bodily infirmity. Linné was not only a naturalist of most accurate observation, but of most philosophical mind, and on this depended in great degree his almost unparalleled influence on the progress of every branch of natural history. Among the important services which he rendered to science, not the least was the introduction of a more clear and precise nomenclature. The groups which he indicated and named have, in the great majority of instances, been retained amid all the progress of science. and are too natural ever to be broken up; while, if the botanical system which he

introduced is artificial, Linné himself was perfectly aware of this, and recommended it for merely temporary use till the knowledge of plants should be so far advanced that it could give place to a natural arrangement. See BOTANY.

LINNET, n. *lĭn'nĕt* [F. *linotte*, the linnet—from *lin*, flax: It. *linosa*, flax-seed, a linnet—named from feeding on *linseed*, the seed of flax], (*Linota*): genus of small song-birds of family *Fringillidæ*, nearly resembling the true finches, gold-finches, etc. The bill is short, straight, conical, and pointed; the wings long, and somewhat pointed; the tail forked. The species are widely distributed in the northern temperate and arctic regions, but much confusion has arisen concerning them, from the difference between the plumage of the breeding season and that of the greater part of the year. The COMMON LINNET (*L. cannabina*), or GREATER REDPOLE (qu. *Redpoll*), is common in almost every part of the British Islands and of Europe, and extends over Asia to Japan. In size, it is about equal to the chaffinch. In its winter-plumage, its prevailing color is brown, the quill and tail feathers black with white edges; in the nuptial-plumage, the crown of the head and the breast are bright vermilion color, and a general brightening of color takes place over the rest of the plumage. This change of plumage causes it to be designated the brown, gray, or rose linnet, according to the season of the year and the sex. It is the *Lintie* of the Scotch. The sweetness of its song makes it everywhere a favorite. It sings well in a cage, and readily breeds in confinement; but the brightness of the nuptial-plumage never appears. The linnet abounds chiefly in somewhat open districts, and seems to prefer uncultivated and furze-covered grounds. Its nest is very often in a furze-bush or hawthorn-hedge; is formed of small twigs and stems of grass, nicely lined with wool or hair; the eggs are four or five in number, pale bluish white, speckled with purple and brown. Linnets congregate in large flocks in winter, and in great part desert the uplands, and resort to the sea-coast.—The MEALY REDPOLE (*L. canescens*) is also a widely distributed species, and is found in n.w. parts of N. America, as well as in Europe and Asia, chiefly in very northern regions: it is rare in Britain. In size it is nearly equal to the common linnet. By some, it is regarded as a larger variety of the LESSER REDPOLL or COMMON REDPOLL (*L. linaria*), common in Britain, though in s. England chiefly a winter visitant. The forehead, throat, and lore are black; in the spring-plumage, the crown of the head is deep crimson; the general color is brown of various shades. This species is common in all northern parts of the world, enlivening with its pleasant twitter and sprightly habits even the desolate wastes of Spitzbergen.—The only other British species is the MOUNTAIN LINNET, or TWITE (*L. montium*), found chiefly in moun-

tainous or very northern districts. It is smaller than the preceding, has a yellowish bill, and never assumes the red color which marks the nuptial-plumage of other species.

LINOLEUM, n. *lĭn-ōl'ĕ-ŭm* [the *lin*, in linseed—from L. *līnum*, flax; and L. *olĕŭm*, oil (see LINT and LINEN)]: material for floor-cloths and artistic decorations, made from a mixture of oxidized linseed-oil and ground cork, rolled out upon a canvas backing. In 1849, Niclés and Rochelder independently discovered that chloride of sulphur will solidify oil, and render it usable in many new ways. In 1859, Perra communicated to the Académie des Sciences the details of a mode of effecting this by mixing and melting the ingredients, and pouring the mixture out in a thin layer. By varying the proportions, the resulting substance assumes varying degrees of consistency. Thus, 100 linseed oil + 25 chloride of sulphur, produces a hard and tough substance; 100 oil + 15 chloride, a supple substance like india-rubber; and 100 oil + 5 chloride, a thick pasty mass. This third kind dissolves well in oil of turpentine. Frederick Walton, of England, afterward found that, by application of heat, linseed oil will become hard without the addition of chloride of sulphur: he conceived that it was not a mere drying, but a real oxidizing (see LINCRUSTA WALTON). Linseed oil, first boiled, is applied as a layer to a surface of wood or glass, then dried; then another layer; and so on till the required thickness is produced. The sheet is then removed, and is found to be very much like india-rubber in elasticity; in fact, the production of a layer by this means is analogous to the smearing of clay-molds with caoutchouc juice to produce india-rubber, as practiced in S. America. (See INDIA-RUBBER.) Drying is a little expedited by adding a small portion of oxide of lead. The solid oil is crushed, and worked thoroughly between heated rollers; and, when treated either with shellac or with naphtha, it becomes applicable in various manufacturing forms. The term *Linoleum* applies properly to the hardened or oxidized oil itself; but it is used chiefly to designate one of the substances made from or with it, a kind of floor-cloth. When the oxidized oil is rolled into sheets, it becomes a substitute for india-rubber or gutta-percha. When dissolved as a varnish or mastic, and applied to cloth, it is useful for waterproof textiles, felt carpets, carriage aprons, wagon and cart sheets, nursing-aprons, water-beds, tank-linings, table-covers, etc., according to the mode of treatment. As a paint, it is useful for iron, for wood, and for ships' bottoms. As a cement, it possesses some of the useful properties of marine glue. When vulcanized or rendered quite hard by heat, it may be filed, planed, turned, carved, and polished like wood, and used for knife and fork handles, moldings, etc. When brought by certain treatment to the consistency of dough or putty, it may be

pressed into embossed molds for ornamental articles. When used as a grinding-wheel, touched with emery, it becomes a good cutter. Lastly, when mixed with ground cork, pressed on canvas by rollers, the canvas coated at the back with a layer of the same oil in the state of paint, and the upper or principal surface painted and printed, it becomes the *linoleum* floor-cloth. Dunn's patented fabric for similar purposes has no oil in it: it is a mixture of cork-shavings, cotton or wool fibres, and caoutchouc, spread upon a cotton or canvas back, and embossed with patterns; it is a kind of KAMPTULICON (q.v.).

LINOTYPE, *lĭn'o-tīp*, THE: a machine designed to do the work of both type setting and type casting, by substituting for lines of individual type, metal bars or slugs with raised letters on one edge. These bars, when arranged in page form, have the same appearance as pages of separate type and may be used either to print from direct or to produce stereotype or electrotype plates in the usual manner. The machine will produce type faces of any kind desired, from 5 to 12 point; requires but one operator, and gives a product equal to five or six hand compositors, furnished with ordinary type.

The linotype was invented in 1885 by Ottmar Mergenthaler, a German by birth, then living in Baltimore, and first put into practical use by the New York *Tribune* in 1886. Since then it has come into general use by newspapers and printing offices throughout the world. In the United States about 10,000 of them are employed on all classes of composition, including the finest books and magazines.

The machine contains as fundamental elements several hundred brass matrices. Each matrix consists of a flat plate having in one edge a female character or matrix proper, and in the upper end a series of teeth which are used for distributing the matrices to their proper places in the magazine of the machine. Matrices are also made having two characters, as for instance, a Roman and Italic letter, either of which may be used at will. There are in the machine a number of matrices for each letter, and also matrices representing special characters and spaces.

The general organization of the machine is as follows: At the top is an inclined fixed magazine, containing channels in which the assorted matrices are stored and through which they slide, entering at the upper and escaping at the lower end, one at a time. Each channel in the magazine has at the lower end an escapement connected by a rod with a finger key on the keyboard, representing the letter or character of the matrices in the corresponding channel. There is a key for each character, and also keys for quads and for the wedge spacers.

The operation of the various keys results in the selection of the matrices and spacers and their collection

in the assembler until it contains all the characters to be represented in one line of print. After the line is thus composed, it is transferred mechanically to a position in front of a mold or slot. This mold is of the size and shape of the slug or linotype required, and it determines both the measure and the body of the line. While the line is in place in front of the mold, the wedge spacers are pushed up through the line, which is instantly and exactly justified thereby.

Behind the mold, there is a melting pot heated by a flame from a gas or oil burner. After the matrix line is in place against the front of the mold, a pump forces the molten metal through the pot mouth into the mold, against and into the characters in the matrix line. The metal instantly solidifies, forming a slug having on its edge raised characters formed by the matrices. The slug is then automatically removed from the mold, being trimmed to the proper length and thickness by knives. The line is then lifted from the mold and shifted laterally, until the teeth in the upper end of the matrices engage the horizontal ribs on a bar which rises, lifting the matrices to the distributor at the top of the machine. The matrices are then transferred to a second bar, still suspended by their teeth, and by screws made to travel along the bar and across the entrance to the magazine. By means of nick combinations of the bar ribs and matrix teeth each character is released over and slides into the proper channel.

It is to be particularly noted that the matrices pursue a circulatory course through the machine, starting singly from the bottom of the magazine, passing thence to the line being composed, thence to the mold, and finally back singly to the top of the magazine. This circulation permits the operations of composing one line, casting from a second, and distributing a third to be carried on concurrently, and enables the machine to run at a speed exceeding that at which any operator can finger the keys. See COMPOSING MACHINES.

LINSEED, n. also LINTSEED, n. *lĭn'sēd* [*lint* and *seed:* AS. *linsæd*—from L. *linum*, flax]: seed of lint or flax; largely exported from the continent of Europe and from India, for making *linseed oil* and *oil-cake;* in order to which the seeds are first bruised or crushed, then ground, and afterward subjected to pressure in a hydraulic or screw press, sometimes without heat, and sometimes with the aid of a steam heat of about 200° F. *Linseed oil* is usually amber-colored, but when perfectly pure is colorless. It has a peculiar and rather disagreeable odor and taste. It is used chiefly in making varnishes, paints, etc. That made without heat (*cold-drawn linseed oil*) is purer, and less apt to become rancid, than that made with application of heat. By cold expression, the seed yields 18 to 20 per cent., and with heat 22 to 27 per cent. of oil. Linseed oil, boiled either alone or with

litharge, white lead, or white vitriol, dries much more rapidly on exposure to the air than the unboiled oil; and *boiled* or *drying* oil is particularly adapted for many uses. —*Linseed cake,* i.e., the oil-cake made in expressing linseed oil, is very useful for feeding cattle: it is largely exported from the continent of Europe. (See OIL-CAKE.) Linseed itself is excellent food for cattle and for poultry. The seed coats abound in mucilage, which forms a thick jelly with hot water, and is very useful for fattening cattle.—*Linseed meal,* much used for poultices, is generally made by grinding fresh oil-cake, but it is better if made by grinding flax-seed itself.

LINSEY-WOOLSEY, n. *lĭn'zĭ-wûl'zĭ* [corruption of *linen* and *wool*]: a stuff made of linen and wool mixed; a light coarse cloth: ADJ. made of linen and wool; poor; mean.

LINSTOCK, n. *lĭn'stŏk* [Dut. *lontstok*—from *lont,* a match; *stok,* a stick: Sw. *luntstake;* Dan. *lunte-stok,* a gunner's match—from Dan. *lunte;* Sw. *lunta,* a match; Dut. *lompe,* a rag, a match]: iron-pointed wooden staff, split or forked at one end, used in gunnery, for holding the lighted match in readiness to be applied to the touch-hole of the cannon. In old pictures, the linstock is seen planted in the ground to the right rear of each piece, with a match smoking in each of the ends of the fork in which it terminates.

LINT, n. *lĭnt* [AS. *linet,* flax, hemp—from *lín,* flax—from L. *lintĕŭm,* linen]: linen scraped into a soft substance, or a soft woolen fabric of linen, used for dressing wounds or sores; the flax-plant; the *Linum usĭtatis'sĭmum,* ord. *Linācĕæ.* See FLAX.

LINTEL, n. *lĭn'tĕl* [Sp. *lintel;* OF. *lintel;* F. *linteau,* the head-piece of a door or window—from mid. L. *lintel'lus*]: horizontal bearer or head-piece over doors, windows, and other openings in walls, usually either of stone or of wood; now sometimes of iron.

LINTON, *lĭn'ton,* WILLIAM JAMES: engraver and author: b. London, 1812; d. near New Haven, Conn., 1897, Dec. 29. He studied drawing and engraving on wood; engraved the first illustrations for the *London Illustrated News* 1842; and became a founder of the *London Leader* 1851, and manager of *Pen and Pencil* 1855. In 1867 he removed to the United States, and after several years in New York settled in New Haven. He was an associate of the Nat. Acad. of Design, and a member of the Amer. Soc. of Painters in Water-colors. His best known engravings are in Jackson's *History of Wood Engraving* (London 1846-7); *Works of Deceased British Painters* (1860); Dr. Holland's *Katrina* (New York 1869); and William Cullen Bryant's *Flood of Years* (1878) and *Thanatopsis* (1878); and his literary works include *Claribel and Other Poems* (London 1865); *The Flower and the Star* (Boston 1878); *Some Practical Hints on Wood*

Engraving and *A Manual of Wood Engraving.* His wife, ELIZA LYNN LINTON (b. Keswick, England, 1822, Feb. 10; d. London, 1898, July 14) was a writer for the press from 1846, and published *Azeth, the Egyptian* (London 1846); *Witch Stories* (1861); *The Lake Country* (1864); *The True History of Joshua Davidson* (1872); *Patricia Kemball* (1874); *The World Well Lost* (1877); *My Love* (1881); and *Autobiography of Christopher Kirkland* (1885).

LIN TSEH-SU: Chinese imperial commissioner: 1785-1850, Jan.; b. at Hing-hwa, province of Fuh-keen. At the village competitive examinations he succeeded in obtaining successively the degrees analogous to A.B. and A.M. He became a doctor of laws and a member of the Hanlin College. When 30 years of age, he received his first official appointment as censor. As financial commissioner for Kiang-nan, in which province a famine was decimating the population, he succeeded in restoring prosperity. He was next appointed viceroy of the two provinces of Shense and Kan-su. But now his brilliant progress was checked. He had long urged stringent measures against the importers, dealers, and consumers of opium, the bane and scourge of his native land; and at the beginning of difficulties with Great Britain, he was appointed to deal with the growing evil. He arrived at Canton, invested with unlimited authority; but his forcible measures excited a war with Britain, and brought down upon himself the anger of his sovereign. He was banished to the region of Ele, where he busied himself in improving the agriculture of the country. He was soon recalled, and restored to more than his former honors.

Lin Tseh-Su, besides thoroughly mastering the statistics and politics of China, gave much time to studying the geography and history of foreign countries, and to private literary study. He is ranked as one of the chief Chinese poets; and the style, literary merit, and logical order of his public documents.are in contrast to the usual diffuse and rambling style of Chinese state-papers.

LINTZ, *lĭnts:* capital of the crown-land of Upper Austria, in a pleasant district on the right bank of the Danube, here crossed by a wooden bridge 838 ft. long; 100 m. w. of Vienna. It is a strongly-fortified, quiet town, and a bishop's seat, with numerous churches, benevolent institutions, and govt. offices. There are large imperial factories for carpets and other woolen goods; and cloths, cottons, cassimeres, fustians, leather, and cards are made. The navigation of the Danube occasions a lively trade. Steamboats ply daily up the river to Ratisbon, and down the river to Vienna. Pop. (1900) 58,791.

LI'NUM: genus of plants. See FLAX.

LINUS, *lī'nŭs:* presbyter of the church at Rome, who appears in the lists of Roman bishops as successor to the

apostle Peter in the charge of that church. There is a probable conjecture (but certainty is lacking) that he is the Linus mentioned II Tim. iv. 21. Irenæus (latter half of 2d c.) states that Peter and Paul, having founded the church at Rome, committed its bishopric to Linus. As the New Testament uses the term 'bishop' as synonymous with elder or presbyter, Linus' rank as one of the Roman pontiffs rests only on tradition. The chronology is confused, and the date of Linus' pastoral service (abt. 12 years) at Rome is variously given from A.D. 55-67 to A.D. 68-80.

LION, n. *lī′ŏn* [OF. *leon;* F. *lion*—from L. *lĕōnem;* Gr. *lĕōn,* a lion: It. *leone*]: a very strong and fierce beast of prey: a sign of the zodiac. LI′ONS, n. plu. the objects of interest or curiosity, or the noted persons, in a place. LI′ONEL, n. *-ĕl,* a young lion. LI′ONESS, n. *-ĕs,* the female lion. LI′ONIZE, v. *-īz,* to show the lions to, that is, the noted persons, and the principal objects of interest and curiosity; to treat as a lion or an object of interest. LI′ONI′ZING, imp.: ADJ. showing or inspecting the objects of interest and curiosity in a place. LI′ONIZED, pp. *-īzd.* LION-HEARTED, courageous. LION'S SHARE, the whole. LION'S PROVIDER, the jackal; one who acts the foil to another man, that is, to show another to a better advantage. *Note.*—The expression 'to see the lions' dates from the times when the royal lions at the Tower of London, before the existence of the Zoological Garden or of menageries, were a London wonder, to visit which strangers were usually taken.

LI′ON (*Felis leo*): largest and most majestic of the *Felidæ* and of carnivorous quadrupeds. It is, when mature, of nearly uniform tawny or yellowish color, paler on the under-parts; the young alone exhibiting markings like those common in the Felidæ; the male has, usually, a great shaggy and flowing mane; and the tail, somewhat long, terminates in a tuft of hair. The whole frame is extremely muscular, and the foreparts in particular are remarkably powerful; giving, with the large head, bright-flashing eye, and copious mane, a noble appearance to the animal, which, with its strength, has led to its being called the 'king of beasts,' and to fancies of its noble and generous disposition, having no foundation in reality. A lion of the largest size measures about 8 ft. from the nose to the tail, and the tail about 4 ft. The *lioness* is smaller, has no mane, and is of lighter color on the under-parts. The strength of the lion is such that he can carry off a heifer as a cat carries a rat.

The lion is an inhabitant chiefly of Africa, though found also in some of the wilds of Asia, particularly in parts of Arabia, Persia, and India. It was anciently much more common in Asia; and was found in parts of Europe, particularly in Macedonia and Thrace, according to Herodotus and other authors. It has disappeared from Egypt, Palestine, and Syria, in which it was for-

merly common. It is not found on the table-lands of Persia. The lion is not, in general, an inhabitant of deep forests, but rather of open plains, in which the shelter of occasional thickets may be found. The breeding-place is always in some secluded retreat, in which the young—two, three, or four in a litter—are watched over with great assiduity by both parents, and, if necessary, are defended with great courage—though, in other circumstances, the lion is more disposed to retire from man than to assail or contend with him. When met in an open country, the lion retires at first slowly, as if ready for battle, but not desirous of it; then more swiftly; and finally by rapid bounds. If compelled to defend himself, the lion manifests great courage. The lion often springs upon his prey by a sudden bound, accompanied with a roar; and it is said that if he fails in seizing it, he does not usually pursue, but retires as if ashamed; it is certain, however, that the lion also often takes his prey by pursuing it, and with great perseverance. The animal singled out for pursuit, e.g. a zebra, may be swifter of foot than the lion, but greater power of endurance enables him to make it his victim. Deer and antelopes are perhaps the most common food of lions. The lion, like the rest of the *Felidæ*, is largely a nocturnal animal; its eyes are adapted for the night or twilight rather than for the day. It lurks generally in its lair during the day, and issues as night comes on, when its tremendous roar begins to be heard in the wilderness. It has a horror of fires and torchlights; of which travelers in Africa avail themselves, when surrounded by prowling lions at night, and sleep in safety. Lion-hunting is attended with danger—a wounded and exasperated lion becoming a most formidable adversary—but besides the necessity of it to farmers in s. Africa and other countries where lions abound, it has been found attractive to mere sportsmen from its excitement. The rifle has proved too mighty for the lion, and lions rapidly disappear before the advance of civilization. In India they are now confined to a few wild districts; and in s. Africa, their nearest haunts are far from Cape Town and from all the long and fully settled regions.

The lion is easily tamed, at least when taken young; and when abundantly supplied with food is very docile, learning to perform feats which excite the admiration of the crowds that visit menageries. Exhibitions of this kind are not, however, unattended with danger. Lions were made to contribute to the barbarous sports of the ancient Romans; a combat of lions was an attractive spectacle; and vast numbers were imported into Rome, chiefly from Africa, for the supply of the amphitheatre. Pompey exhibited 600 at once.—Lions have frequently bred in the menageries of Europe, and a hybrid between the lion and the tiger has occasionally been produced.

The mane of the lion and the tuft at the end of the

tail are not fully developed till he is six or seven years old. The tail terminates in a small prickle, the existence of which was known to the ancients, and which was supposed by them to be a kind of goad to the animal when lashing himself with his tail in rage. The prickle has no connection with the caudal vertebræ, but is merely a little nail or horny cone, about two lines in length, adhering to the skin at the tip of the tail.

There are several varieties of the lion, slightly differing in form and color, but particularly in the development of the mane. The largest lions of s. Africa are remarkable for the large size of the head and the great and black mane. The Persian and Asiatic lions generally are of lighter color, and inferior in size, strength, and ferocity to the African lion. Guzerat and s. Persia produce a somewhat smaller variety, remarkable as almost destitute of mane.

LI'ON, in Heraldry: important among the animals borne in coat-armor. As early as the 12th c., the king of beasts was assumed as an appropriate emblem by the sovereigns of England, Scotland, Norway, Denmark, the native princes of Wales, the counts of Flanders and Holland, and various other European potentates. The lion occurs in different positions. 1. The earliest attitude of the heraldic lion is *rampant*, erect on his hind legs, and looking before him, the head being shown in profile, as he appears in the arms of Scotland, and originally did in those of England. This was the normal position of a lion; but as the royal animal came to be used by all who claimed kindred with royalty, and to be granted to favorite followers by way of augmentation, a diversity of attitude was adopted for distinction. 2. *Rampant gardant*, erect on the hind-legs, and affronté or full-faced. 3. *Rampant regardant*, erect on the hind-legs, and looking backward. 4. *Passant*, in a walking position, with the head seen in profile. 5 *Passant gardant*, walking, and with the head affronté. 6. *Passant regardant*, walking, and with the head looking behind. 7. *Statant*, with all the four legs on the ground. 8. *Saliant*, in the act of springing forward on his prey. 9. *Sejant*, rising to prepare for action. 10. *Sejant affronté*, as in the crest of Scotland. 11. *Couchant*, lying down, but with his head erect, and his tail beneath him. 12. *Dormant*, asleep, with his head resting on his forepaws. 13. *Coward*, or *Coué*, with his tail hanging between his legs. The lion passant gardant is often blazoned as the *lion of England;* and at a time when terms of blazonry were comparatively few, it was confounded with the Leopard (q.v.); hence the lion passant and rampant gardant came to be called respectively the *lion-leopardé* and *leopard-lionné*. Two lions may be depicted *rampant combatant*—i.e., face to face—or *rampant addossé*, placed back to pack. Among leonine monsters are two-headed lions, bicorporate and tricorporate lions, lion-

dragons, and lion-poissons. There is also the Bohemian lion, with two tails, and the more celebrated winged lion of St. Mark, adopted by the republic of Venice. The island republic bore, azure, a lion winged or sejant, holding between his forepaws a book, open argent, in which are the words, *Pax tibi Marce Evangelista meus.* Two or more lions borne on one shield are sometimes (though never on a royal coat) blazoned *Lioncels.*

LIONCED, a. *lī'onsd,* or LEONCED, n. *lē'onsd:* in *her.,* adorned with lions' heads, as a cross the ends of which terminate in lions' heads.

LIP, n. *lĭp* [Dut. *lip;* Dan. *läbe;* Ger. *lippe,* a lip: L. *labĭŭm;* Gael. *liob;* prov. Ger *labbe,* lip, mouth—an imitative word]: one of the two edges or borders of the mouth; the edge of anything: V. in *OE.,* to kiss. LIP'-LESS, a. *-lĕs,* without lips. LIPPED, a. *lĭpt,* having lips. LIP'LET, n. *-lĕt,* a little lip. LIP-DEVOTION, not a real attachment or devotion; mere words. LIP-LABOR, or LIP-SERVICE, labor or action of the lips which does not convey the sentiments of the heart; words without deeds. LIP-WISDOM, wisdom in the words of the mouth only. TO HANG THE LIP, to drop the under lip, indicative of sullenness or contempt.

LIPARI ISLANDS, *lĭp'a-rē or lē'pâ-rē:* group of 12 volcanic islands in the Mediterranean, lat. 38° 20′—38° 55′ n., long. 14° 15′—15° 15′ e.; on the n. coast of Sicily, and comprised in the dept. of Messina. The intense volcanic action induced the ancient classical poets to localize in these islands the abode of the fiery god Vulcan—hence their ancient name, *Vulcaniæ Insulæ.*—Lipari, for extent and produce, is much the most important of the group: it is about 18 m. in circuit. Its finest products are grapes, figs, olives, and corn. It has large export trade in pumice-stone, sulphur, nitre, sal-ammoniac, soda, capers, fish, and in Malmsey wine, largely manufactured for home and foreign trade. The warm springs in this island are much resorted to. The climate is delightful.—Lipari, the chief town, is a bishop's see, has two harbors, an episcopal palace, hospital, gymnasium, and a castle on a fine rock. The island is almost wholly of pumice-stone, and supplies all parts of the world with that article. Besides Lipari, the principal islands are Vulcano, Stromboli, Salini, Panaria, Felicuddi, Alicudi, and Ustica; Stromboli and Vulcano are actively volcanic. Pop. of group about 22,000.

LIPIC ACID, n. *lĭp'ĭk ăs'ĭd* [Gr. *lipos, fat*]: an acid produced by the action of nitric acid upon oleic acid.

LIPOGRAM, n. *lĭ'pō-grăm* [Gr. *leipō,* I leave; *gramma,* a letter]: species of verse characterized by the exclusion of a certain letter, either vowel or consonant. The earliest author of lipogrammatic verse was the Greek poet Lasus (b. B.C. 538); and it is recorded of one Tryphiodorus, Græco-Egyptian writer of the same period,

that he composed an Odyssey in 24 books, from each of which, in succession, one of the letters of the Greek alphabet was excluded. Fabius Claudius Gordianus Fulgentius, Christian monk of the 6th c., performed a similar feat in Latin. In modern times, the Spaniards have been most addicted to this laborious frivolity. Lope de Vega has written five novels, from each of which one of the vowels is excluded: several French poets also have practiced it.—See Henry B. Wheatley's book on *Anagrams* (1862). LI'POGRAMMAT'IC, a. *-grăm-măt'ĭk,* pertaining to.

LIPOMA, n. *lī-pō'mă,* LIPOMATA, n. plu. *lī-pō'mă-tă* [Gr. *līpos,* fat]: the most common form of fatty tumor.

LIPOTHYMOUS, a. *lī-pŏth'ī-mŭs* [Gr. *leipō,* I fail; *thumos,* mind or soul]: swooning; fainting. LIPOTH'YMY, n. *-ĭ-mĭ,* a swoon; a fainting.

LIPPE, *lĭp'pĕ,* usually LIPPE-DETMOLD, *lĭp'pĕ-dĕt'molt:* small principality of n. Germany, surrounded on the w. and s. by Westphalia, and on the e. and n. by Hanover, Brunswick, Waldeck, and a detached portion of Hesse-Cassel; 469 sq.m.; pop. (1900) 138,952. The present constitution of Lippe dates from 1853, Mar. 15. Its cap. is Detmold (q.v.), other towns are Lemgo and Horn. The famous Teutoburg-Wald (*Saltus Teutoburgenis*), in which the legions of Varus were annihilated by Arminius (see GERMANICUS CÆSAR), traverses the s. part of the principality, which is on the whole rather hilly, but has many fertile valleys. The largest river is the Werre, tributary of the Weser. The principal occupation of the inhabitants is agriculture, and the rearing of cattle, sheep, and swine; much care is bestowed on the cultivation and management of forests, as Lippe is perhaps the most richly wooded district in Germany. Linen weaving is the chief manufacturing industry. Among mineral products are marble, iron, lime, and salt. The princes of Lippe are one of the oldest sovereign families of Germany, and were flourishing as early as the 12th c. The first who took the name of Lippe was Bernhard von der Lippe, 1129. The family split into three branches 1613—Lippe, Brake, and Schaumburg.

LIP'PE-SCHAUM'BURG. See SCHAUMBURG-LIPPE.

LIPPI, *lĕp'pē,* FILIPPINO FILIPPO; commonly called FILIPPINO LIPPI, or LIPPINO LIPPI, *lĕp-pē'nō lĕp'pē:* painter: 1460-1505, Apr. 13; b. Florence; natural son of Fra Filippo Lippi and Lucrezia Buti. It is said that he studied under Fra Diamante, his father's pupil. He afterward studied under Sandro Botticelli, also a pupil of his father, and one of the most celebrated of his school. Lippi soon acquired high reputation, and executed various works in Florence, Bologna, Genoa, Lucca, and at Rome, where, 1492, he painted some frescoes for Cardinal Caraffa, in the church of Sta Maria Sopra Minerva. But his high position is proved principally

by his works in the Brancacci Chapel in the church of the Carmine at Florence. The frescoes in this chapel have always been held in high estimation; they have been studied by the most celebrated painters, among others by Raphael and Michael Angelo; and though the series were long believed to be the work entirely of Masaccio, they are now ascertained to have been commenced by Masolino, continued by Masaccio, and finished by Filippino; the works of Lippi being—*The Restoring of a Youth to Life,* part of which was painted by Masaccio; *The Crucifixion of St. Peter; St. Peter and St. Paul before the Proconsul,* and *St. Peter Liberated from Prison;* also, according to some, *St. Paul visiting St. Peter in Prison,* in which the figure of St. Paul was adopted by Raphael in his cartoon of *Paul Preaching at Athens.* Lippi died at Florence.

LIP'PI, Fra Filippo: Florentine painter of great talent: 1412-1469, abt. Oct. 8; b. Florence; son of a butcher. Vasari describes his life as one of curious and romantic adventure: the account is not fully accepted by modern biographers, yet is not shown improbable. He was left an orphan at an early age, and spent his youth as a novice in the convent of the Carmine at Florence, where his talent for art was developed. While sailing for pleasure he was seized by corsairs, and carried to Barbary; after several years of captivity, he regained his liberty, and 1438, was painting at Florence. Lippi was much employed by Cosmo de' Medici, and executed many important works for him. While painting in the convent of Sta Margarita at Prato, a young lady, Lucrezia Buti, a boarder or novice, who had been allowed by the nuns to sit for one of the figures in his picture, eloped with him; and though strenuous efforts were made by her relations to recover her, he successfully resisted their attempts, supported, it is thought, by Cosmo; and she remained with and had a son by him, who became an artist perhaps even more celebrated than Lippi himself. He died at Spoleto, being at the time engaged with Fra Diamante, one of his pupils, in painting the choir of the cathedral.

LIPPI, Lorenzo: Italian poet and painter: b. Florence 1616; d. there 1664. He published a comic epic poem in 12 cantos, *Il Malmantile vacquisdato,* under the anagrammatic pseudonym, Perloni Zipoli (1676). The poem abounds in rare humor and is written in light, swift verse. The language, however, abounds in Florentine provincialities, and is unintelligible without such a commentary as is furnished to the edition of 1688 by P. Munucci. As a painter he was an imitator of Santi di Tito's manner. There is a *Crucifixion* of his in the Uffizi gallery at Florence; and *The Triumph of David;* and *Christ and the Woman of Samaria* are in the Imperial gallery at Vienna.

LIPPINCOTT, *lĭp'ĭn-kŏt,* JOSHUA BALLINGER: American publisher: b. Juliustown, N. J., 1816; d. Philadelphia 1886, Jan. 5. He was a bookseller in Philadelphia 1831-6 and in the last named year founded the house of J. B. Lippincott & Co., which by 1850 was at the head of the book trade in Philadelphia. After his death, in 1886, the firm was converted into the J. B. Lippincott Company. *Lippincott's Magazine* was established in 1868.

LIPPINCOTT, SARA JANE (CLARKE): author: b. Pompey, N. Y., 1823, Sep. 28; d. New Rochelle, N. Y., 1904, Apr. 20. She was educated in Rochester, N. Y., removed to New Brighton, Penn., 1842, and married Leander K. Lippincott, of Philadelphia, 1853. In 1844 she began contributing verses to the New York *Mirror,* under the pen name of GRACE GREENWOOD, which she has continued to use. She made two extended European tours, contributed frequently to the New York *Times* and other periodicals, was active in anti-slavery and social reform, edited *The Little Pilgrim,* juvenile magazine, for many years; and delivered numerous lectures and addresses. Her published works include *Greenwood Leaves* (Boston 1850); *History of My Pets* (1850); *Poems* (1851); *Recollections of My Childhood* (1851); *Haps and Mishaps of a Tour in Europe* (1854); *Merrie England* (1855); *Forest Tragedy and Other Tales* (1856); *Stories and Legends of Travel* (1858); *History for Children* (1858); *Stories from Famous Ballads* (1860); *Stories of Many Lands* (1867); *Stories and Sights in France and Italy* (1868); *Records of Five Years* (1868); *New Life in New Lands* (1873); *Victoria, Queen of England* (1883); *Recollections of My Childhood;* etc. In 1889, Nov., she contributed to the New York *Herald* an article on the Italian method of petrifying the dead.

LIPPINCOTT, WILLIAM HENRY: American artist: b. Philadelphia, Pa., 1849, Dec. 6. He began his art studies in the Pennsylvania Academy of Fine Arts, and his first professional appearance was as a book illustrator and later as a scene painter. In 1874 he became the pupil of Bonnat and for the eight years he remained at Paris exhibited annually in the Salon. The wide range of the work which he has done since he took up his residence in New York includes portrait, genre, landscape and scene painting, and he appears regularly as an exhibitor in the annual American art exhibitions. His most important pictures include *The Duck's Breakfast; Un Jour de Congé: Pink of Old Fashion; Helena; Infantry in Arms; Love's Ambush;* and *Pleasant Reflections.*

LIPPMANN, *lĭp'man,* JULIE MATHILDE: American author and critic: b. Brooklyn 1864, June 27. She received an academic education and began writing at an early age. She has contributed to the leading American

magazines; and has written verse and juvenile stories Her publications include *Through Slumbertown and Wakeland* (1891); *Jock o'Dreams* (1891); *Miss Wildfire* (1897); *Dorothy Day* (1898); *Sweet Ps* (1902); *Dearie, Dot, and the Dog* (1903); *Del's Debt* (1903); *Everyday Girls* (1904); also the plays *A Fool and his Money* (1897); *Cousin Faithful* (1897); and *The Facts in the Case* (1897).

LIPSIUS, JUSTUS: the Latin name of the famous scholar, Joest Lips: b. 1547 at Issche, near Brussels; d. 1606. He was a professor successively at Jena, Leyden, and Louvain. Lipsius, Scaliger, and Casaubon were known as the great 'Triumvirate.' Although his most important works were his editions of Tacitus (whom he claimed to know by heart) and of Seneca, his editions of *Velleius Paterculus* and *Valerius Maximus* and his works on Roman antiquities are still of value.

LIP'TON, Sir THOMAS JOHNSTONE: Irish merchant and yachtsman: b. Glasgow, Scotland, 1850. He came to America as a steerage passenger in 1865, for two years worked in the South Carolina rice fields, later in various northern towns, opened a provision shop in Glasgow, attained great business success and finally organized the 'Lipton, Limited,' the largest commercial establishment in the United Kingdom, where it controls 420 shops. This business is capitalized at $200,000,000, with tea, coffee, and cocoa estates in India and Ceylon, fruit-orchards in Kent and elsewhere, and a packing-house and refrigerator-car line in Chicago. Lipton has given largely for charitable purposes, including $125,000 in Diamond Jubilee year (1897) for a dinner fund for the poor, and $500,000 toward the Alexandra trust for supplying working-people with cheap dinners. He is best known, however, for his efforts as a representative of the Royal Ulster Yacht Club to obtain the America's Cup in the international yacht-races of 1899, 1901, and 1903. His three British-built yachts were in each contest defeated in three straight races. He was knighted in 1893, and made a baronet in 1902.

LIQUATION, n. *lĭ-kwā'shŭn* [F. *liquation*—from L. *liquātĭōnem*, a melting—from L. *liquātus*, made liquid, melted]: the act of operation of melting or sweating out; the capacity of being melted (see ELIQUATION). LIQUEFACTION, n. *lĭk'wĕ-făk'shŭn* [L. *factus*, made or done—from *facĭō*, I make]: the act or operation of melting or dissolving; the state of being dissolved. LIQUEFACTION OF GASES (see GASES). LIQ'UEFA'CIENT, n. *-fā'shĭ-ĕnt*, a medicine which promotes liquefaction. LIQUEFY, v. *lĭk'wĕ-fī* [F. *liquéfier*—from L. *lĭquĭfĭĕrī*, to become liquid]: to melt or make liquid; to change a solid into a fluid; to be melted. LIQ'UEFYING. imp. *-fī-ĭng*. LIQ'UEFIED, pp. *-fīd*. LIQ'UEFIER, n. *-fī-ĕr*, that which liquefies or melts. LIQ'UEFI'ABLE, a. *-fī'ă-bl*, that may be melted.

LIQUESCENT, a. *lĭ-kwĕs'ĕnt* [L. *liquescen'tem,* becoming fluid, melting—from *liquērĕ,* to be fluid]: melting; becoming fluid—more frequently *deliquescent.*

LIQUEUR, n. *lē-kėr'* [F. *liqueur*—from L. *liquōrum,* a liquor (see LIQUOR)]: compound of water, alcohol, and sugar, flavored with some aromatic extract; a cordial; name given to a great variety of foreign compounded spirits, indeed to any alcoholic preparation flavored or perfumed and sweetened to be more agreeable to the taste. The following are the principal liqueurs: *Aniseed Cordial,* weak spirit flavored with aniseed, coriander, and sweet fennel seed, and sweetened with finely clarified syrup of refined sugar. *Absinthe* (q.v.), strong spirit flavored with the young tops of certain species of Artemisia (q.v.). *Clove Cordial,* flavored with cloves, bruised, and colored with burned sugar.

Kümmel, or *Doppel-Kümmel,* is the principal liqueur of Russia; it is made in the ordinary way with sweetened spirit, flavored with cumin and caraway seeds, the latter usually so strong as to conceal any other flavor. There are two qualities: that made in Riga is in common use, and is not the finest; the better sort is manufactured only in smaller quantities in Weissenstein, in Esthonia; the chief difference is in the greater purity of the spirit used. *Maraschino* is distilled from cherries bruised, but instead of the wild cherry, a fine delicately-flavored variety, called *Marazques,* grown only in Dalmatia, is used. This cherry is largely cultivated around Zara, the capital, where the liqueur is chiefly made. Great care is taken in the distillation to avoid injury to the delicate flavor, and the finest sugar is used to sweeten it.

Noyau, or *Crême de Noyau,* is a sweet cordial flavored with bruised bitter-almonds. In Turkey, the fine-flavored kernels of the Mahaleb cherry are used, and in some places the kernels of the peach or the apricot. *Peppermint* is a common liqueur, especially among the lower classes of London, where very large quantities are sold; it usually consists of ordinary sweetened gin, flavored with the essential oil of peppermint, which is previously rubbed up with refined sugar, and formed into an oleosaccharum, which enables it to mix with the very weak spirit. See also CURACOA; KIRSCHWASSER.

LIQUID, n. *lĭk'wĭd* [F. *liquide,* liquid—from L. *liquĭdus,* flowing, liquid—from *liquĕō,* I melt]: any substance flowing or capable of flowing: a letter which has a smooth flowing sound; the *liquids* are m, n, l, r, so named because the letters flow smoothly from the mouth combined with other letters, as in *brave, slave, smooth, sneer:* ADJ. fluid, or capable of flowing; in the form of water; soft; smooth. LIQ'UIDLY, ad. *-lĭ.* LIQUIDATE, v. *lĭk'wĭ-dāt* [mid. L. *liquidātus,* clarified, made clear]: to clear away gradually, as a debt; to settle or adjust; to pay; to diminish or lessen. LIQ'UIDATING, imp. LIQ'UIDATED,

pp. settled; paid. LIQUIDATED DAMAGES, definite sum fixed by an agreement, as damages to be paid by the party violating the agreement (see DAMAGES). LIQ'UIDATOR, n. *-dā-tėr,* one who adjusts and settles. LIQ'UIDA'TION, n. *-dā'shŭn* [F.—L.]: the act or process of clearing away or diminishing gradually; the act of adjusting and settling debts. LIQUIDITY, n. *lĭk-wĭd'ĭ-tĭ,* or LIQ'UIDNESS, n. *-nĕs,* quality of being fluid or liquid; thinness. LIQUIDIZE, v. *lĭk'wĭd-īz,* to reduce to a liquid state. LIQ'UIDI'ZING, imp. LIQ'UIDIZED, pp. *-īzd.*

LIQUIDAMBAR, *lĭk'wĭd-ăm-bėr,* or LIQUID AMBER, or SWEET GUM: genus of trees of nat. ord. *Altingiaceæ,* the only genus of the order; having flowers in male and female catkins on the same tree, the fruit formed of 2-celled, many-seeded capsules, and the seeds winged. They are tall trees, remarkable for fragrant balsamic products. *L. styraciflua,* the AMERICAN LIQUIDAMBAR, or SWEET GUM tree, is a beautiful tree with palmate leaves, native of Mexico and the United States. It grows well in Britain. Its wood is of hard texture and fine grain, and makes good furniture. From cracks or incisions in the bark, a transparent, yellowish, balsamic fluid exudes, called *Liquid Liquidambar, Oil of Liquidambar, American Storax, Copalm Balsam,* and sometimes, but erroneously, *White Balsam of Peru.* It gradually becomes concrete and darker colored. Its properties are similar to those of storax. That of commerce is brought mostly from Mexico and New Orleans.—*L. Orientale,* smaller tree with palmate leaves, is native of the Levant and of more eastern regions, and yields abundantly a balsamic fluid, supposed to be the *Liquid Storax* imported from the Levant, but on this point there is diversity of opinion.

LIQUOR, n. *lĭk'ėr* [L. *liquor,* a fluid—from *liquĕō,* I melt: F. *liqueur*]: a fluid; intoxicating liquid, generally applied to spirits: a fluid extract: V. to take intoxicating drinks—an Americanism, and a slang expression. LIQ'UORING, imp. LIQUORED, pp. *lĭk'ėrd.* IN LIQUOR, intoxicated. LIQUOR SANGUINIS, *lĭk'ėr săng'gwĭn-ĭs* [L. *sanguĭnis,* of blood]: liquor of the blood; the transparent, colorless fluid part of the blood, in which the corpuscles float; plasma.

LIQUORICE. See LICORICE.

LIRA, *lē'ra* [Lat. *libra* (see LIVRE)]: Italian silver coin varying in value according to time and place. The Tuscan lira was equal to 80 French centimes; the Austrian lira or *zwanziger* had about the same value. The present lira Italiana, or lira nuova, of the Italian kingdom is equal to the French franc (19 cents 3 mills) and is divided into 100 centimes.

LIRELLA, n. *lĭr-ĕl'lă* [L. dim. of *lira,* a ridge of land]: in *bot.,* the sessile linear apothecium of lichens.

LIRELLATE, a. *lĭr-ĕl'lāt*, like a furrow; also LIRELLIFORM, a. *lĭr-ĕl'lĭ-fawrm* [L. *forma*, shape]: formed like a furrow.

LIRIODEN'DRON. See TULIP TREE.

LIROCONITE, n. *lī-rŏk'ō-nīt* [Gr. *leiros*, pale; *kŏnĭă*, dust]: a hydrated arseniate of copper, occurring in several copper-mines in obtuse pyramidal crystals of a sky-blue or verdigris-green color.

LISBON, a. *lĭz'bŏn:* of or from Lisbon, capital of Portugal.

LISBON, *lĭz'bon* (Portug. *Lisboa;* called by the ancient Lusitanians, *Olisipo* or *Ulisippo*, and by the Moors *Lish-buna*): capital of Portugal, province of Estremadura, on the right bank of the Tagus, which is here about six m. wide; about 18 m. from the mouth of the river. Pop. (1900), with the suburbs of Belem and Olivaes, 708,750. The city is built partly on the shores of the Tagus, and partly on seven hills. Its appearance is wonderfully picturesque; and it resembles Constantinople in point of situation and magnificence of prospect. Including its suburbs, it extends about five m. along the river. The harbor, safe and spacious, is protected by strong forts, but the city itself is unwalled and without fortifications. The e. and older part, around the Castle-hill—an eminence crowned with an old Moorish castle, ruined by earthquakes—is composed of steep, narrow, crooked, badly-paved streets, with high, gloomy, wretched-looking houses; but the newer portions are well and regularly built. The modern portion, which lies on even ground, in the valley between the Monte do Castello on the east, and the hills of San Francisco and Do Carmo on the west, consists of several parallel streets crossed by others at right angles, and is regular, well built, clean, traversed by street railways, electrically lighted, and provided with a telephone service. Of these the D'Ouro (Gold), Do Prato (Silver), D'Augusta, Do Chiado (Cloth) streets extend about one-half mile, north to south, having at their southern extremity the Praça do Commercio, a large and handsome square, surrounded on three sides by the naval arsenal, the exchange, custom-house, and other public buildings, and having the Tagus on the south. At the northern extremity of these streets are the Praça da Figueira, a picturesque square, used as a public market, and a handsome square called the Rocio or Praça de Dom Pedro IV., with a fine bronze statue of Dom Pedro IV., surmounting a tall marble column. To the northwest extends, for nearly a mile, a broad avenue, the Avenida da Liberdade, lined with handsome houses, and planted with shrubs, etc. Besides this the finest open spaces are the Estrella Gardens, the Botanic Garden, the Praça do Principe Real and that of Pedro de Alcantara. The western quarter, called Buenos Ayres, is airy and pleasant, and here foreigners chiefly reside. The town of Belem, on the west, beyond the river Alcantara, forms a

sort of suburb to Lisbon. It has a well-known tower, forming one of the defenses of the harbor. The principal residence of royalty is the Ajuda Palace, built of white marble on the summit of a hill. The castle of St. George is remarkable for the beauty of its situation. Other noteworthy buildings are the cathedral, once a Moorish mosque, on the slope of the Castle Hill, on the east; the church do Coraçao de Jesus, surmounted by a splendid dome; the church of the Martyrs, erected on the spot where Alphonso I. mounted the walls of the city and rescued it from the Moors; the handsome church of Santa Engracia; the church and monastery of Belem; and the church of San Roque. The numerous convents which crown the hills, and appear like palaces and fortresses, are for the most part massive and imposing structures. But unquestionably the most remarkable specimen of architecture is the aqueduct which conveys water to the city from springs rising near the village of Bellas, about 6 miles distant. It is partly conducted underground, but on approaching Lisbon it crosses the deep valley of Alcantara, which is spanned for nearly 2,500 feet by a bridge of thirty arches, the loftiest of which is 240 feet high and 110 feet wide. An additional supply is brought in by another series of works from a distance of 18 miles. The scientific and literary institutions comprise the Royal Academy of Sciences, founded in the latter part of the 18th century; the well equipped Polytechnic School, with a museum, botanic garden, and observatory; an academy of medicine and surgery; institute of agriculture and veterinary medicine; Royal Marine Academy; Royal Military College; School of Music, National Library, containing about 300,000 volumes, and that of the Academy of Sciences, numbering about 80,000 volumes; the Royal Schools of Vicente de Fora; Royal School of Drawing and Architecture. The harbor, or rather the roadstead, is one of the finest in the world; and the quays, which extend between two and three miles along the bank of the river, are elegant and commodious. The exports consist chiefly of wine, oil, fruit, cork, fish, onions and other vegetables, and salt; and the principal imports are grain, silk, linen, cotton, and woolen cloths, iron, steel, hardware, dried fish, petroleum, colonial produce and coals. An aggregate of about 6,000 vessels of over 7,000,000 tons enter and clear the port annually. The manufactures include various textile goods, tobacco, paper, chemicals, and soap; there are also sugar-refineries, iron-foundries, and potteries.

Lisbon is said to have been founded by the Phœnicians, and was a flourishing city, capital of Lusitania, when first visited by the Romans. It was taken by the Moors 712, from whom it was recaptured by Alfonso I. 1147. It became the seat of an archbishopric 1390, and of a patriarchate 1716. Lisbon has been frequently visited by earthquakes; that of 1755 destroyed a great part of the

city and 40,000 inhabitants. Lisbon was captured by the French 1807, but given up to the British 1808, after which it was protected by the fortified lines of Torres Vedras.

LISLE, Guillaume de. See De Lisle, Guillaume.

LISLE THREAD. See Lille (town in France).

LISP, v. *lĭsp* [Dut. *lispen;* Sw. *läspa,* to lisp, to speak imperfectly: an imitative word]: to speak with the tongue against the teeth or gums in such a way as to make *s* or *z* sound *th*—most common among children; to utter feebly or imperfectly, as a child: N. the imperfect utterance of *s* or *z*. Lisp'ing, imp.: Adj. uttering with a lisp: N. the act of speaking with a lisp. Lisped, pp. *lĭspt*. Lisp'ingly, ad. *-lĭ,* in a lisping manner; imperfectly; affectedly. Lisp'er, n. *-ẽr,* one who lisps.

LIS PENDENS, *lĭs pĕn'denz* [Lat. lawsuit pending]: in *Law,* a pending suit. In a suit at law pendency begins soon as an attachment is made under the writ; at equity, as soon as the subpœna is served on the defendant.

LISPUND, n. *lĭs'pŭnd* [Dan. and Sw. *lispund;* Icel. *lippund*]: weight in use in Denmark, Sweden, etc., and varying in different countries from 14 to 18 lbs. avoirdupois.

LIS'SA (anc. *Issa*): Austrian island in the Adriatic, belonging to Dalmatia; 10 m. long, 5 broad; 38 sq.m. It has steep shores and an unfertile soil. Here the British defeated the French 1811, and the Austrians defeated the Italians under Admiral Persano. It has two fortified harbors. Pop. abt. 7,000.

LISSOM, or Lissome, a. *lĭs'sŭm* [see Lithe]: a colloquial form of Lithesome; supple; elastic; free.

LIST, n. *lĭst* [Dut. *lijst,* border, catalogue: Icel. *lista,* border of cloth: It. *lista,* any kind of list or selvage, a border about a garment, the lists of tilting, a row or rank of anything set in order: Ger. *leiste,* border, a stripe]: a strip on which is written a row of names; a catalogue; a roll or register; a schedule; the border of cloth; ground inclosed for a race or combat, generally in the plu. Lists: V. to cover with list, as the side of a door or window; to register; to enroll; to engage for the public service, as soldiers by entering the names in a list or register—usually written *enlist.* List'ing, imp. Listed, pp.: Adj. party-colored in long streaks; inclosed for tournaments; engaged in the public service; enrolled. List, or Listel, n. *lĭst'ĕl,* in *arch.,* a little square molding; a fillet. To enter the lists, to engage in combat, or in a controversy. Civil list, the servants of government, not military, as judges, ambassadors, secretaries, or the money appropriated for their support—now usually applied only to the sovereign's household expenses.

LIST, n. *lĭst* [F. *liste*]: a white band across a horse's forehead; a band; a strip of cloth. See List 1: also Fillet.

LIST, v. *lĭst* [AS. *lystan*, to have pleasure in, to raise desire: Dan. *lyste*, to desire: Icel. *lyst*, pleasure, desire; *lysta*, to desire: Dut. *lusten*, to like: connected with LUST, which see]: to choose; to desire; to be disposed: N. desire; pleasure; in *OE.*, *impersonally*, it pleased: N. in *OE.*, desire; willingness. LIST'ING, imp. LIST'ED, pp. LIST'LESS, a. *-lĕs*, denoting the condition of one who has no pleasure in his work, and who therefore acts without energy; heedless; uninterested; careless. LIST'LESSLY, ad. *-lĭ*. LIST'LESSNESS, n. *-nĕs*, heedlessness; carelessness; indifference to what is passing.—SYN. of 'listless': supine; thoughtless; inattentive; vacant; indifferent; weary; languid; indolent; disinclined.

LIST, v. *lĭst:* a contr. for LISTEN, which see.

LISTEN, v. *lĭs'n* [AS. *hlystan*, to listen: Icel. *hlust*, an ear; *hlusta*, to listen: Dut. *luysteren*, to whisper, to listen]: to hearken; to give ear; to obey; to attend. LISTENING, imp. *lĭs'ĕn-ĭng:* ADJ. giving attention: N. the act of listening or giving attention. LISTENED, pp. *lĭs'ĕnd.* LISTENER, n. *lĭs'ĕn-ẽr*, one who listens.

LISTER, *lĭs'tẽr*, JOSEPH, B.A., M.B., D.SC., F.R.C.S., F.R.S., D.C.L., LL.D., Lord: surgeon: b. Upton, Essex, England, 1827, Apr. 5. He graduated at London Univ. in arts 1847, and medicine 1852, and became a fellow of the Royal Col. of Surgeons, England, 1852, and of the Royal Col. of Surgeons, Edinburgh, 1855; was successively assistant surgeon and lecturer on surgery, Edinburgh; regius prof. of surgery, Glasgow; prof. of clinical surgery, Edinburgh; prof. of clinical surgery, King's Coll. Hospital, London, and was surgeon extraordinary to Queen Victoria. He was president of the British Association for the Advancement of Science 1896, and president of the Royal Society 1895-1900. In addition to important observations on the coagulation of the blood, the early stages of inflammation, and other matters, his great work has been the introduction of what is known as the antiseptic system of surgery (see ANTISEPTIC SURGERY). This system and the theory on which it is based are now almost universally accepted, and their acceptance has in great measure revolutionized modern surgery, removing some of its most serious dangers, and thus greatly widening its field of usefulness. Lister has been awarded many foreign honors; in 1880 he received the medal of the Royal Soc., and in 1881 the prize of the Acad. of Paris. In 1883, he was made a baronet, and in 1897 he was raised to the peerage. His father was Joseph Jackson Lister, London merchant, who attained distinction by his knowledge of optics and by his improvement of the achromatic microscope. Among Lord Lister's works is *Remarks on a Case of Compound Dislocation of the Ankle with Other Injuries, Illustrating the Antiseptic Treatment* (1870).

LISTERIAN, a. *lĭs-tẽ'rĭ-ăn:* of or pertaining to Sir

Joseph Lister or his surgical method (see LISTER, JOSEPH, Lord. LISTERISM, n. *-izm:* the antiseptic method of surgery and of dressing wounds as practiced by Sir Joseph Lister (see ASEPSIS; ANTISEPTIC SURGERY; CARBOLIC ACID; GERM THEORY). LISTERIZE, v. *-īz:* to treat (surgically) by Lister's method.

LISTON, *lis'ton*, ROBERT: surgeon: 1794, Oct. 28—1847, Dec. 7; b. Ecclesmachan, county of Linlithgow, Scotland; son of the Rev. Henry Liston, minister of the parish. After studying anatomy under Barclay in Edinburgh, and following the usual course of medical study in that city, he went to London 1816, where he attended the surgical practice of Abernethy at St. Bartholomew's. He returned to Edinburgh; 1818 was elected a fellow of the Royal College of Surgeons of that city, began his career as a lecturer on anatomy and surgery, and soon became remarkable for boldness and skill as an operator. Because of his many successful operations on patients who had been discharged as incurable by the surgeons of the Edinburgh Infirmary, he was requested by the managers to refuse his assistance to any person who had been a patient in that institution, and to abstain from visiting the wards. He naturally declined to accede to these extraordinary propositions, and in consequence was expelled, and never entered again its wards, until 1827 he was elected one of its surgeons. His surgical skill, and the rapidity with which his operations were performed, soon acquired for him a European reputation; and 1835 he accepted the invitation of the council of University College to fill the chair of clinical surgery, and soon acquired a large London practice. In 1840, he was elected a member of the council of the College of Surgeons; 1846, he became one of the board of examiners. In the very climax of his fame, and apparently in vigorous health, he was struck down by a fatal disease. His most important works are *Elements of Surgery*, 1831, and *Practical Surgery*, 1837 (4 editions). His uncontrollable temper, and the coarseness of language in which he frequently indulged, involved him in various quarrels with his professional brethren; yet did not prevent his obtaining the esteem of his pupils.

LISTS, n. plu. *lists* [OF. *lisse;* F. *lice*, a list or tilt-yard: comp. F. *lice*, the weft or woof of cloth]: the ground inclosed for a race or combat. See LIST.

LISZT, *list*, FRANZ: French pianist and composer: b. Raiding, near Odenburg, Hungary, 1811, Oct. 22; d. Baireuth, 1886, July 31. He was scarcely nine years of age when he made his first appearance as a pianist and improvisator in Odenburg and Presburg with such success that several noblemen undertook the expenses of his training at Vienna under Czerny the pianist, and Salieri the composer. In 1823, he made a great sensation as executant and improvisator on the piano in Vienna, Mu-

nich, Paris and other cities. His father thereupon traveled with him through France, Switzerland and England for further study of his art. While yet a boy he composed the operetta *Don Sancho* (1824) and the following year launched out into grand opera at Paris. His hearing of Paganini in 1831 affected him greatly and had a most stimulating influence on his cultivation of virtuosity. At this time he experienced the conflict, between his religious predilections and his father's wishes for his musical success, which resulted in his yielding to the latter's advice and adopting the profession of music instead of studying for the ministry. In 1835, he had completed his studies as composer for the piano, and in company with the Countess d'Agoult, who afterward became the mother of his children, he began his travels, during which he gave a series of concerts in Switzerland, Italy, and Hungary, winding up with some remarkable performances in Vienna. From 1839 to 1847 he made a triumphal progress through the whole of Europe. His success was due less to the astounding power of execution with which he rendered the masterpieces of every age, than to the sublimity, the noble feeling, the depth of expression with which he rendered every number of his programme. Honors now were showered upon him; he was made Kapellmeister to the Grand Elector of Weimar; Frederick William IV. knighted him, and he was decorated by every court in Europe. From this time (1848) to 1861 he worked at Weimar as the teacher and 'inspirer' of a large circle of young musicians. He then settled in Rome. In 1870, he was made president of the Royal Musical Academy at Budapest and henceforth lived in turn there, at Rome and at Weimar. The villa in the last city which he occupied now contains the Liszt museum.

In the career of Liszt as a composer there are three distinct periods. The compositions of his first period consist partly of *Transcriptions* for the pianoforte (a department in piano music inaugurated by him); partly of piano pieces, songs and choruses for male voices. In the second period, during his residence at Weimar, he applied himself to purely instrumental music, in accordance with the principles which he had learned of Berlioz. He sought on the piano to express by a symphony familiar poetic objects and by means of this to adumbrate ideas of a lyric or dramatic order. To this class of compositions belong his twelve *Symphonic Poems,* namely, (1) *Ce qu'on entend sur la Montagne,* known also as *The Mountain Symphony;* (2) Tasso's *Lamento e Trionfo;* (3) Preludes, after Lamartine's *Notre Vie est-elle autre Chose qu'une Serie de Preludes;* (4) *Orpheus;* (5) *Prometheus;* etc. Later in this period appeared *Missa Solennis* and *The Hungarian Coronation Mass.* In his third period, from his residence in Rome to his death, he is chiefly remarkable as a composer of sacred music. He produced the oratorios *Christus;* and *The Legend of*

Saint Elizabeth; a *Requiem,* for male voices and the organ; besides *Cantatas, Psalms, Paternosters,* and short pieces for the church choir. In all these works he followed the method inaugurated by Berlioz and Wagner, and his works indicate the high water mark of the North German school. What perhaps won him most renown were his *Symphonic Poems* and his sacred compositions, in which latter he strove to blend the liturgical and dramatic elements of music. He was also a musical critic of considerable power. Among his published works may be enumerated: *Frederic Chopin* (1852); *Lohengrin et Tannhäuser de R. Wagner* (1851); and *Les Bohemiens et leur musique en Hongrie* (1859). Consult: Ramann, *Franz Liszt als Künstler und Mensch* (1893); Voegel, *Franz Liszt* (1888); Von Lenz, *Great Piano Virtuosos* (1899); and Fay, *Music Study in Germany* (1880).

LITANY, n. *lĭt'ă-nĭ* [F. *litanie*—from mid. L. *litanīă*—from Gr. *litaneï'ă,* a prayer, supplication]: solemn form of supplication used in public worship. The specific meaning of the word has varied considerably at different times, but in general it has denoted a solemn act of supplication addressed with the object of averting the divine anger, especially on occasions of public calamity. Through all the varieties of form which litanies have assumed, one characteristic has been maintained—viz., that the prayer alternates between the priest or other minister, who announces the object of each petition, and the congregation, who reply in a common supplicatory form, the most usual of which was the well-known 'Kyrie eleison!' (Lord, have mercy!) In one procession which Mabillon describes, this prayer, alternating with 'Christe eleison,' was repeated 300 times; and in the capitularies of Charlemagne, it is ordered that the 'Kyrie eleison' shall be sung by the men, the women answering 'Christe eleison.' The utterance of an litany in procession by great numbers of people was common. From the 4th century onward, the use of litanies was general. The *Antiphonary* of St. Gregory the Great contains several. In the Rom. Cath. Church, three litanies are especially in use—'the litany of the saints' (the most ancient), the 'litany of the name of Jesus,' and the 'litany of Our Lady of Loretto.' Of these, the first alone has a place in the public service-books of the church, on the rogation-days, in the ordination service, the service for the consecration of churches, the consecration of cemeteries, and many other offices. Although called litany of the saints, the opening and closing petitions, and indeed the greater part of the litany, consist of prayers addressed directly to God; and the prayers to the saints are not for their help, but for their intercession on behalf of the worshippers. The litany of Jesus consists of a number of addresses to Christ under his various relations to men, in connection with the several details of his passion, and of adjurations of him through the memory of

what he has done and suffered for the salvation of mankind. The date of this form of prayer is uncertain, but it is referred, with much probability, to the time of St. Bernardino of Siena, 15th c. The litany of Loretto (see LORETO) resembles both the above-named litanies in its opening addresses to the Holy Trinity, and in its closing petitions to the 'Lamb of God, who taketh away the sins of the world;' but the main body of the petitions are addressed to the Virgin Mary under various titles, some taken from the Scriptures, some from the language of the Fathers, some from the mystic writers of the mediæval church. Neither this litany nor that of Jesus has ever formed part of any of the ritual or liturgical offices of the Rom. Cath. Church, but there can be no doubt that both have in various ways received the sanction of the highest authorities of that church.

In the Prayer-book of the English Church, the litany is retained, but though partaking of ancient forms, it differs from that of the Rom. Cath. Church, and contains no invocation of the Virgin or the saints. It is divided into four parts—invocations, deprecations, intercessions, and supplications, in all of which is preserved the old form of alternate prayer and response.

LITCHFIELD, *lĭch'fēld:* Conn., borough, one of the county-seats of Litchfield county; near Bantam Lake, and on the Shepaug, Litchfield & Northern railroad; about 15 miles northwest of Waterbury and 28 miles west of Hartford. The first settlement was made in 1719, and the place was called Bantam, but after a few years the name was changed to Litchfield. During the revolutionary war the place was used for storage of supplies. The women of Litchfield melted and made into bullets the statue of George III. which the people of New York city had torn down from Bowling Green on July 9. Sarah Pierce opened here, in 1792, a school for the higher education of women. Judge Tapping Reeve, in 1784, opened here the first law school in the United States. It was patronized by many young men who afterward became prominent in the affairs of the nation. It was the birthplace of Ethan Allen and of Henry Ward Beecher and Harriet Beecher Stowe. Lyman Beecher was a pastor here for 16 years, beginning with 1810. Litchfield is situated in a region where grazing and dairying are the prominent industries, but valuable deposits of nickel ore are found in the vicinity. The beautiful scenery, beautiful and mild climate and places of historic interest make it a favorite pleasure resort. The chief industrial establishments are creameries. Bantam lake, nearby, is the largest in the state. Pop. (1910) 3,005.

LITCHFIELD: Ill., city, in Montgomery county; on the Illinois Central; the Cleveland, C., C. & St. L.; the Wabash; the Chicago, P. & St. L.; the Chicago & A.; and the Jacksonville & St. L.; about 50 miles northeast of

Saint Louis, Mo., and 45 miles south of Springfield. It is in a good farming section, with oil, coal, and natural gas in the vicinity. The chief industries are mining and manufacturing. The principal manufactures are railroad cars, foundry products, glass, briquet ornaments, mine engines, brick, tile, flour, and lumber. The trade is in the manufactures, coal, oil, and some farm products. It has good schools, a public library, and several prominent buildings. The government is vested in a mayor, whose term of office is two years, and in a council, with administrative officials appointed by the mayor and approved by the council. Pop. (1900) 5,918; (1910) 5,971.

LITCHFIELD, *lĭch'fēld*, GRACE DENIO: American novelist: b. New York, 1849, Nov. 19. She has lived in Europe for a number of years, but since 1888 has resided in Washington, D. C. Her works are: *Only an Incident* (1883); *The Knight of the Black Forest* (1885); *Criss Cross* (1885); *A Hard-Won Victory* (1888); *Little Venice* (1890); *Little He and She* (1893); *Mimosa Leaves* (1895); *In the Crucible* (1897); *The Moving Finger Writes* (1900); *The Letter D* (1904).

LITCHI, *lēt'chē*, or *lī'tchĭ*, or *lē-chē'*, or LEE-CHEE (*Nephelium Litchi*): one of the most delicious fruits of China and of the Malayan archipelago. The tree which produces it belongs to nat. ord. *Lapindaceæ*, and has pinnate leaves. It is extensively cultivated in s. China, and in northern provinces of Cochin-China, but is said not to thrive in a climate either much more hot or much more cold. The fruit is of the size of a small walnut, and grows in racemes. It is a red or green berry, with a thin, tough, leathery, scaly rind, and a colorless semi-transparent pulp, in the centre of which is one large dark-brown seed. The pulp is slightly sweet, subacid, and very grateful. The Chinese preserve the fruit by drying.—The *Longan* and *Rambutan* are fruits of the same genus.

LI'TER. See LITRE.

LITERAL, a. *lĭt'ėr-ăl* [L. *literālis;* It. *litterale*, literal—from L. *litĕră*, a letter]: according to the letter or exact words; real; not figurative. LIT'ERALLY, ad. *-lĭ*, according to strict meaning of the words and letters; word by word; without exaggeration. LIT'ERALNESS, n. *-nĕs*, the state of being literal. LIT'ERALISM, n. *-ĭzm*, the state of agreeing with the exact letters or words; that which accords with the exact words. LIT'ERALIST, n. *-ĭst*, one who adheres to the exact letter.

LITERARY, a. *lĭt'ėr-ă-rĭ* [L. *literārĭŭs*, belonging to learning—from *litĕră*, a letter: It. *letterario:* F. *littéraire*]: pertaining to, or connected with, literature or men of letters; respecting learned men; consisting in written or printed compositions. LIT'ERATE, a. *-āt*, learned: N. one who is ordained without having passed through a college or university course. LIT'ERA'TI, n. plu

-ā'tī [L.]: learned men; the learned. LIT'ERATURE, **n.** *-ă-tūr* [OF. *literature*—from L. *litĕratūrā*, scholarship]: written composition, except those on science or art; writings or productions on a given subject; acquaintance with books; learning. LIGHT LITERATURE, works of fiction, and that class of literary productions in general, meant to beguile idle moments. POLITE LITERATURE, literary works of elegance and taste, such as poetry, essays, and the lighter phases of history; belles lettres.—SYN. of 'literature': knowledge; science; erudition; belles lettres.

LITERARY HISTORY: the history of books, treating therefore the attainments and progress of the human mind in every department, and the characteristic tendencies and opinions of every age. Political and ecclesiastical histories deal chiefly with events; literary history, with thought; each merges into the other, and they are necessarily connected in any complete narrative. Bibliography, biography, and even special criticism are but the subordinate parts of literary history; its main object is to show the general progress and phases of intellectual development and of æsthetic and moral culture. The ancients left no example of this species of history. But the classical and mediæval authors rendered scarcely any service to this department, except by leaving materials. From the 16th century many histories of European literature have appeared, and the 19th and the early 20th centuries especially produced valuable synoptical views both of European and Oriental literature.

LITERARY PROPERTY (aside from Copyright, Patent, and Trade-mark): ownership of an author's writings by him, apart from any connection with their publication. It is different from ordinary ownership as of something acquired by purchase or bequest, its title being in the material and form of its subject, and not in any quality predicated on its market value; thus, an author's ownership of an unpublished novel is precisely the same as his ownership of a letter that he has written. Its title rests on the fact of creation, and may be compared to the interest which a father has in the earning capacity of his children. The distinctive characteristic of this kind of property is shown in this, that an author inscribing and presenting a copy of verses to a friend, does not thereby lose his literary property therein. The recipient may destroy, or give away, or sell, his copy of the verses, but if those verses are published without the author's sanction, the latter can prosecute the recipient therefor. This property is transferable, like any other, by sale, bequest, absolute gift, or regular succession; but creditors cannot seize it for publication, and its unauthorized publication by any one can be legally restrained. See COPYRIGHT; PATENT; TRADE-MARK.

LITERATIM, ad. *lĭt'ĕr-ā'tĭm* [L. *literātim*—from *litĕrā*, a letter]: literally. LITERATIM ET VERBATIM [L. *et*, and; *verbātim*, verbally]: letter for letter, and word for word.

LITERATURE.

LITERATURE (Lat. *litteratura* from *littera*, a letter of the alphabet). In its most comprehensive sense, the word 'literature' includes everything that is or has been committed to writing: but as it is usually employed it means the record of men's thoughts, experiences, fancies or emotions conveyed in language that gratifies an instinctive æsthetic sense, and contributes, therefore, in some degree to the pleasure of the reader. The two broad divisions of literature are prose and poetry. COMPARATIVE LITERATURE is the study of the literatures of several peoples as to the relation which they bear to one another and with reference to their points of likeness and unlikeness, either in thought or style.

So far as we can trace the origins of literature among different races, it begins with poetry.—usually in some rude, rythmic chant employed by those engaged in a common task; as for example, sailors at the oar, women at the distaff, or children at their play. Hence, the earliest fragments of any literature are apt to consist of rude verses, charms, oracles, or lullabies. Later, conscious art steps in and develops the various primitive literary forms into the different varieties of recognized poetry — the lyric, voicing deep feeling of any kind, the drama representing action, the hymn or religious chant, and the epic which is narrative poetry infused and illumined by vivid imagination. Prose is developed usually through a process of evolution beginning with laws and meagre chronicles, then passing into history and the fable, the apologue, the short story, the romance, and the novel. Philosophy is often at first found expressed in poetic forms, and afterwards in prose; while the essay is of late development. These stages cannot be traced in all the literatures of the world, because in many instances the remains that we possess were composed at a comparatively late stage of literary history: but the literatures of Greece and Rome give evidence that this process is the natural and usual one.

ORIENTAL LITERATURES.—The oldest literatures of which we have anything like complete records are those of the Egyptians, of the Jews, and the inscriptions which have been found among the buried cities of Assyria and Babylonia. The literature of ancient Egypt must have been enormous in extent. The earliest specimens of it which we possess are religious in character and are engraved upon the pyramids erected about 2500 years before Christ. These are ritnals relating to magic: and somewhat like them are the texts found in what is called *The Book of the Dead* (q.v.). Beside works which may be called theological or mystical in character, there are many collections of proverbs and maxims, most of them written upon papyrus and relating to the conduct of practical life. We have also some semi-scientific treatises produced in Egypt, covering arithmetic, astronomy, and medicine. Poetry is represented by a sort of epic

celebrating the victory over the Hittites by Ramesis II., and there are also (of a later date) lyrics, hymns, and love-songs. Finally, there have been preserved papyri containing short stories in which the Egyptians evidently took great pleasure. These stories seem to have influenced the romantic literature of the Greeks at a later period, and some of them are repeated by Herodotus in his history.

Hebrew Literature of early date is comprised in the sacred books of the Bible wherein we find an immense variety of literary forms—lyrics, moral maxims, bits of epic, history, brief and wonderfully vivid short stories, all permeated with the deep religious enthusiasm which has always characterized the Jewish people. *Assyrian and Babylonian Literature* has been preserved in part upon the inscribed bricks which excavations have restored to us and which were usually the work of Babylonian priests, or imitations of what those priests composed. The tablets or bricks which were used as we use paper have been exhumed during the past 60 years upon the sites of the Babylonian cities, and they show that these ancient libraries, so far back as 3000 B.C. were richly stored with literary material of every kind. The decipherment of the cuneiform writing enables us to reproduce the conditions of that remote period both in its history, its public life, its laws, and its social organization. Even now, only a part of this great body of writing has been rescued from the mounds which cover it. Every year adds to the extent of it and to the very definite knowledge which scholars have gained respecting it. (See CUNEIFORM WRITING; BABYLONIA). Other and somewhat cognate literatures are those of the *Chaldeans* and later of the *Arabs*. They all exhibit great intellectual activity, a fondness for historical composition, and they prove the existence of a multitude of readers.

Chinese Literature, so far as we can trace it, is less ancient than the others to which reference has just been made. It is not until the 10th century before Christ that we are able to fix upon a definite period when literary form was consciously employed. About 600 B.C. Confucius wrote or edited those classics of the Chinese language which are still held in high reverence and which have served as models for scholars and writers in China down to the present day. From the teachings of Confucius as found in his texts, *The Five Classics*, has sprung that curiously oriental philosophy which still sways the Chinese mind and which it is so difficult for the people of the West to understand. Moral wisdom and practical ethics constitute the keynote of them all; though later works were produced dealing with history and representing poetry in its different forms. The main characteristic of Chinese literature is its philosophical thought, its worldly wisdom, and its moral purity. Within the last six centuries the

drama and the novel have become popular in China. The early invention by the Chinese of block-printing served to spread a knowledge of what Confucius and others wrote; so that the peculiar sort of education which the Chinese possess has been widely diffused.

In *India* there is also found a very old and very remarkable literature, the remains of which date back for several thousand years. Primarily it is religious, as is seen in the *Rig-Veda* and the *Atharva-Veda;* though later, epic poetry is found in two great poems written in Sanskrit and entitled the *Mahabharata* and the *Ramayana.* The exact date of these poems is unknown; but the so-called Vedic Period of Hindu literature extends from about 1500 B.C. to 500 B.C. The Hindu mind was essentially metaphysical and mystical; and in these poems, whether religious, epic, or dramatic, there is a pervasive mysticism which comes equally from Brahmanic and Buddhistic sources. In India also, logic, philosophy, and science were cultivated, and are thought to have affected the early writings of the Greeks of Asia Minor. See HINDU LITERATURE.

Persian Literature is of much later origin, unless we hark back to the so-called Avestan and the Old Persian inscriptions. Beginning with about the 6th century before Christ, the Persians developed a form of poetry which, though poor in thought, shows a wonderful harmony and cleverness of expression with an abounding richness of vocabulary. Among the most famous of the Persian poets are Bidpai whose fables are known to us through the Greek of Æsop and the Latin of Phædrus, together with Firdausi, the epic writer, and the famous lyrists, Hafiz and Omar Khayyam (1123 A.D.), Later Persian poetry contains brilliant epigrams, and a species of drama which is of little interest to Western readers. It was in Persia that one finds in all probability the origin of Occidental fiction, since it abounded in novelettes and stories of adventure which, becoming known to the Greeks, were transposed and imitated so that they formed a lasting link between the writings of the East and of the West. The *Arabs* possess a literature not unlike that of Persia, but centering around the Korân of Mohammed, a book which has exercised upon the whole Mohammedan world an influence comparable with that which the Hebrew Bible has had upon Europe and the peoples of the Western Hemisphere.

Bibliography.— See Hilmy, *The Literature of Egypt and the Soudan* (London, 1886); Moulton, *The Literary Study of the Bible* (New York 1899); Driver, *Introduction to the Literature of the Old Testament* (London, 1897); *Sayce, Babylonians and Assyrians* (New York, 1899); Giles, *A History of Chinese Literature* (New York, 1901); Frazier, *A Literary History of India* (New York, 1898); Browne, *A Literary History of Persia* (New York, 1902); Huart, *A History of Arabic Literature* (New York, 1903).

LITERATURE.

Occidental Literature.— *Græco-Roman.* The Greek or Hellenic race was not confined to the boundaries of Greece itself, but extended over the central and southern parts of Italy, over Sicily, and over a great portion of Asia Minor and the islands. It is probable that it was from their contact with the Asiatics, especially the Persians and Egyptians, that the Greeks received their primal impulse toward literary composition. Yet their native genius was so great as to produce the most splendid literature which the world had yet seen and one which has most deeply affected the thought and the ideals of the whole Western world. The Greek intellect was remarkable for clear thinking, profound reasoning, creativeness, and a passionate love of beauty; and all these traits are seen in the earliest remains which we possess of their literature. Its beginnings were apparently among the Asiatic Greeks both on the Continent and the islands. Most famous of all, as it is the earliest, is the epic poetry of Homer, which scholars are inclined to think the work of many poets rather than of an individual. (See Homer.) The date traditionally ascribed to him in 850 B.C. A study of his two epics, the *Iliad* and the *Odyssey* shows that they are not primitive poetry at all, but rather represent the splendid fruition of a long period of poetical effort. Next to Homer comes the didactic poet Hesiod, who in verse expressed a sort of moral philosophy. The early lyric poets of about the same period — Archilochus and Callinus, with their successors Alcæus and Sappho — were Greeks of Asia and the islands, and they developed lyric poetry to the high pitch which is represented by the most famous of them all,—Pindar of Thebes. From the 5th century the drama assumed an important place in Greek literature, first with the three great tragic poets Æschylus, Sophocles, and Euripides, and then with the writers of comedies, Aristophanes and Menander, who in a sense were social and political satirists. Like the epic, Greek philosophy and history had their birth in Asia Minor. The early philosophers dealt with the material world; but presently Socrates instituted ethical investigations (450 B.C.). Though Socrates taught orally, he inspired such famous writers as Plato and Aristotle, together with the Stoics, Epicureans, and Cynics, who set before themselves as their principal problem the question of how man ought to live. In history the great names are Herodotus, Thucydides, and Xenophon, who flourished from about 480 to 355 B.C. Herodotus makes of history an entertaining narrative. Thucydides investigates its philosophy. Xenophon records facts with a studied simplicity of style.

The ancient Greeks, like the modern, were intensely interested in political questions, so that their philosophical writers discussed theories of government. The republican institutions of Greek Proper led to the de-

velopment of oratory and rhetoric: and Greek oratory is exemplified by many brilliant and powerful speakers, among whom Demosthenes and his rival, Æschines, are most famous (350 B.C.). When, however, Greece fell under the dominion of Philip of Macedon and his son Alexander the Great, there came about a rapid decline in original creation. Learning was cultivated and Greece produced scholars rather than great makers of literature. The city of Alexandria with its vast university bred up investigators and critics of every kind, and fostered science — geometry, represented by Euclid, astronomy by Eratosthenes, and grammatical science by the Alexandrian librarians. Medicine was also studied, together with the natural sciences. The most original piece of literature belonging to this period is found in the rustic poetry (Idylls) of Theocritus (q.v.).

After Rome had conquered Greece, history, represented especially by Josephus, Plutarch, and Dio Cassius, once more revived, while geography was developed by Ptolemy. But there had now sprung up a new literature written in the language of *Rome* though directly inspired by the influence of the Greeks. Until about the year 300 B.C., the Roman people were a rude race given to war and to agriculture. Their contact with the Greeks of Southern Italy, however, led them rapidly to an imitation of the refinements of Greek civilization. Among these refinements literature took a strong hold upon their imagination, and there was soon exhibited in Italy a rapid development of literary forms, beginning with the epic and the drama in both of which the great poet Ennius won fame, and passing through the other stages that have been indicated at the beginning of this article. The names of Catullus, Vergil, Horace, Ovid, Martial, and Lucan in poetry, are immortal; and in prose the orator Cicero, the great historians Cæsar, Livy and Tacitus, and the philosopher Seneca, have swayed the thought and moulded the forms of all the literatures of modern Europe. During the reign of Augustus Cæsar, Roman literature reached its climax. After that period it showed a gradual decline owing partly to the despotic character of the government, and partly to the influx into Italy of foreigners to whom Latin was an alien tongue. The principal characteristics of Roman letters were strength, conciseness, and simplicity, just as the characteristics of the Greeks were idealism, grace and beauty. See LATIN LITERATURE.

MEDIÆVAL LITERATURE.— When the Roman Empire fell, in the 5th century A.D., there existed for many generations a sort of intellectual chaos. Barbarous peoples in Gaul, and Germany, and Britain, forgot a great deal of what their Roman conquerors had taught them: yet the continued existence of the Roman Church preserved something of the culture of the past: and, although Greek was lost, the Latin language still endured as a common medium of communication between those

whose own tongues are still mere dialects. The Church schools and the monasteries cherished the classical tradition, and though the Latin language was greatly corrupted for a time, it was still used not merely for the recording of laws but for literary composition as well. Little by little out of the Latin and side by side with it, there grew into definite form the so-called Romance languages (q.v.)—the Italian, the Spanish, the French, the Sardinian, the Roumanian, and the Portuguese. For a long while, these were regarded as vulgar and fit only for the uneducated: so that even great geniuses like Petrarch and Dante wrote many of their most careful compositions in Latin rather than in the vernacular. But in time the Romance languages were accepted as the normal speech even of the educated: and though Latin was still employed in scientific treatises and as the official language of the Catholic Church, it yielded to the newer tongues as a medium for literary composition. See MIDDLE AGES.

THE RENAISSANCE.—The Renaissance primarily is to be regarded as the revival of an interest in the classical past, both that of Greece and of Rome. Yet in effect it stimulated the intellectual efforts of all Europe in a far wider way, and led to the development of what we now call the modern spirit. It showed itself not only in letters, but also in exploration and discovery, in new applications and inventions of science, and in politics. To this period belongs the growth of what is known as Humanism, (q.v.)—a movement directed against the narrow pedantry of the scholastics, and favoring the growth of a free spirit both in literature and in science. The greatest of the humanists was Erasmus (q.v.) who himself wrote and spoke always in Latin, yet whose influence tended directly toward a new and more original creativeness in the sphere of letters. Hence, it is not long after the 14th century that we find each of the countries of Europe, of which the separate nationalities was now clearly distinguished, pursuing in its own way the cult of literature, deriving much, to be sure, from the traditions of Greece and Rome, and yet adopting forms which were by no means those of classical antiquity. See RENAISSANCE.

MODERN EUROPEAN LITERATURES.—*English literature* exhibits the effect of three sources, for it contains a Teutonic element derived from the Anglo-Saxons, a Romance element which came into it from France at the time of the Norman Conquest, and a Latin element due to the authority of authors such as Spenser, More, Milton, and others, who had steeped themselves in the classics. It may be said, indeed, that a Celtic element was not lacking, since both Ireland and Scotland have furnished men of genius to amplify the stately muster-roll of England's authors. The original Roman occupation of Britain left no lasting traces: so that the first literary productions were the work of Anglo-Saxon

poets such as Cædmon, attaining some importance after Alfred the Great had united the English people under his single sway. The Norman Conquest for a time checked the natural growth of English literature; but when the two peoples had blended, and when the English tongue had once been born, we find works of undoubted genius, beginning with those of Chaucer and Gower in poetry, and Wiclif in prose, commencing to appear. Now and then political disturbances broke the continuity of literary history, but the Elizabethan Age (q.v.) showed English genius blazing out with a splendor that has never since been equaled. After this period, in which Shakespeare's is the greatest name, came the Jacobean era which produced Milton, and then the period of the Restoration with Dryden. Under Queen Anne and the Georges, pure literature in England was overshadowed by the work of Berkeley and Locke in philosophy, and Hume in history. Yet the polished poetry of Pope and the fine prose of Addison and Steele, together with the beginnings of the novel with Fielding, Smollett, and Richardson, show that the stream had been diverted rather than exhausted. In the 18th century also, Gibbon wrote his colossal history, and Adam Smith produced his classic work on political economy. The same century bred the great orators Chatham, Pitt, and Burke. In the 17th century, begins what is known as Romanticism in English literature, marked by a love of nature, by a desire to know life at first hand, and by a warmth of feeling which had been suppressed in the earlier and more classical period. The great names in the Romantic movement are those of Burns, Scott, Wordsworth, Byron, and Coleridge; while the close of the century found Tennyson, Browning, Carlyle, Thackeray, Dickens, and George Eliot, accepted as models to be followed by the producers of what is best in English literature. See ENGLISH LITERATURE.

French Literature grew slowly side by side with the French language. Its origins may be dated from the tenth century, of which period we have a few short religious poems. During the hundred years that followed, there grew up a national poetry celebrating the exploits of knights and nobles. These poems were sung by the minstrels, and finally their compositions became epics relating the legends that clustered around the name of Arthur, Amadis, and Charlemagne. During the Middle Ages, lyrics in the form of ballads were popular, and now and then compositions in prose were written. After the twelfth century the religious drama, composed of miracle plays and mysteries, also flourished. Just before the Renaissance, the brilliant chronicles of Froissart and the *Memoirs* of Commines gave promise of the fine historical writing for which French literature was subsequently destined to be famous. After the sixteenth century there was great literary activity

in France, though the classical models which were then revived hampered somewhat the freedom of expression. The greatest literary figures of this time were Rabelais (q.v.), the satirist, and Montaigne, who created the modern essay. In the 17th century, great attention was paid to nicety of form; and French style was polished to a degree unknown in any other language. Fiction-writing, beginning with the short story, was already much in vogue. Then follows a host of famous authors such as Boileau, who gave law in criticism, Bossuet, the eloquent orator, and Corneille, Racine, and Molière, who are among the greatest exponents of dramatic literature known to the modern world. Descartes founded a new system of philosophy, while La Fontaine wrote charming fables, and Perrault practically invented the nursery tale. In the 18th century, French literature shows the influence of scepticism in Bayle, Voltaire, Rousseau, and D'Alembert. The 19th century witnessed a revolt in France against classicism,—a revolt traceable in the writings of Lamartine (q.v.) and especially of Victor Hugo (q.v.). Later, one finds the Romantic element represented in fiction by Dumas, and the rise of the so-called Realists headed by Flaubert and Zola, and followed closely by the psychological novelists Daudet and Bourget. Perhaps the greatest name in all French literature is that of Balzac (q.v.) who combined in his brilliant series of novels Romanticism, Realism, and Psychology with wonderful effect. See FRENCH LITERATURE.

Italian Literature, like the French, grew out of the Latin, and in its early stages it resembles that of France. Its greatness did not begin until the 14th century when there arose three immortal writers,—Dante, Boccaccio, and Petrarch. The achievements of these three have never been equaled by any of their successors; although Ariosto, a most prolific and varied writer, and Tasso, the author of the *Gerusalemme Liberata* stand next to them. Italian literature, however, from the fifteenth century is distinguished more by ingenuity and verbal cleverness than by genius, owing perhaps to the troubled political conditions existing throughout the Peninsula. In our own time, however, and since United Italy became a fact, Italian genius appears to have revived and has been brilliantly represented by the novelists and dramatists, D'Annunzio, De Amicis, and Matilde Serao. See ITALIAN LITERATURE.

Spain and *Portugal*, like the other Latin countries, produced a literature which begins with epic poetry and is strongest in fiction, satire, and the drama. To foreign readers the most interesting works of these two literatures are the *Poem of the Cid* (Spanish), Cervantes' famous novel of *Don Quixote*, the witty jests of Quevedo, and the great Portuguese epic of Camoëns entitled *The Lusiad*. In recent times Spain

has produced a number of clever novelists, among whom are Juan Valera and Benito Gáldos, the first representing idealism and the second realism in their respective works. The Moorish influence which is to be found in Spain has given an oriental tinge to the verse as well as to the prose of that interesting country; but it has, perhaps, made Spanish literature less appreciated and less fully understood by men of other races. See PORTUGUESE LITERATURE; SPANISH LITERATURE.

German Literature takes its rise in the war-songs which began to be composed about the year 600, and which being linked together, led to a sort of saga or epic. In early German literature there is very little general interest, however, prior to the twelfth century, inasmuch as the German language was rough and ill adapted for artistic treatment. After the reign of Charlemagne, however, there gradually sprang up a series of heroic poems sung by the Minnesingers. To this age (1100–1300 A.D.) belongs the great series of epic poems known as the *Nibelunglied* which is usually called "the German Iliad." Love poetry and narrative verse are also found at this time together with some moral but uninspired philosophic compositions. German prose begins about the year 1270 with the sermons of Berthold. From 1300 to 1624, dramatic writing in Germany was made popular by Hans Sachs (q.v.) and political satire in the famous story of *Reynard the Fox*. Somewhat later during the same period, theological discussion occupied the minds and the thoughts of Germans; and Luther's version of the Bible stands as a great monument of German prose. On the whole, however, until the reign of Frederick the Great in the eighteenth century, German literature was largely academic and imitative. Frederick's fondness for French brought to bear a new influence on his country's literature which, during his reign, became illustrious through the masterpieces of Herder, Goethe, Schiller, Lessing, Klopstock, and Wieland, all of whom combined the art of the French with an intense feeling of nationality. Since then, the poets Uhland (1787–1862) and Heine are the most noted names outside the sphere of historical composition, philosophy, and critical scholarship, until we come to the present generation which has produced such novelists as Freytag and Lindau, and the socialistic dramatists Sudermann and Hauptmann. The general spirit of German literature is one of sentimentalism tinged now and then with pedantry on the one hand, or with a sort of rough rude vigor on the other. See GERMAN LITERATURE.

In *Russia* the development of anything more than a local cultivation of letters is of recent date. Not till the 18th century, did Western Europe pay any attention to the writings of Russians who, indeed, often wrote in French instead of in their native language. At the period mentioned, Russians began to translate the

masterpieces of Germany, France, and England; and in the nineteenth century the novelist and dramatist, Alexander Pushkin, (q.v.) first placed the literature of his country in an independent position. There followed him the gloomy novelist, Gogol, whose powerful prose may be taken as heralding the rise of Tolstoi and Turgénieff,—names now familiar to all the world. See Hapgood, *A Survey of Russian Literature*, (Chicago, 1902), and the general article RUSSIAN LITERATURE.

The minor nationalities of Europe have produced sporadically important works yet they need not be considered in detail. The *Finns* have the glory of possessing one of the world's great epics, the *Kalevala* (q.v.), and *Scandinavian Literature* is enriched by a number of famous names of which that of Isben (q.v.) is the best known. Nevertheless, the productions of these and other minor countries represent only the same tendencies which have worked out results upon a greater scale elsewhere; and hence, for them the reader may be referred to the general articles on DUTCH LITERATURE, FLEMISH LITERATURE, HUNGARIAN LITERATURE, BOHEMIAN LITERATURE, POLISH LITERATURE, and TURKISH LITERATURE. That portion of the literature of the English language written in the United States, in Canada, and in Australia, will also be found treated in special articles where are given selected bibliographies. For a survey of literature in general from a comparative point of view the reader may consult Poinsett, *Comparative Literature* (London, 1904); and Loliée, *The Historic Evolution of Literatures* (original edition Paris, 1903; English translation, London, 1905).

LITHE, a. *līth* [Goth. *lithus;* AS. *lith;* Ger. *glied*, a limb: Icel. *lidr*, a joint: Norw. *lidig*, that which bends or moves with ease]: flexible; easily bent. LITHE'NESS, n. *-nĕs*, flexibility; pliability. LITHESOME, a. *līth'sŭm*, supple; nimble. LITHE'SOMENESS, n. *-nĕs*, the state or quality of being lithesome. LITHER, a. *līth'er*, in *OE.*, soft; pliant; slothful.

LITHIA, n. *lĭth'ĭ-ă* [Gr. *lithos*, a stone]: an alkali, first found in a mineral called *petalite*. LITH'IUM, n. *-ĭ-ŭm*, an elementary body, a white metal obtained from lithia.—See LITHIUM, below.

LITHIASIS, n. *lĭth-ī'ă-sĭs* [Gr. *lithi'ăsis*—from *lithos*, a stone]: gravel or urinary calculi, deposits of solid elements in the parts of the urinary apparatus. LITH'IC, a. *-ĭk*, belonging to a stone or calculus; applied to an acid liable to be formed in the kidney or the bladder, and to concrete into calculi (see URIC ACIDS LITHIC ACID DIATHESIS). LITH'ICS, n. plu. *-ĭks*, medicines that tend to prevent stones in the bladder.

LITHIC ACID DIATHESIS. See URIC ACID DIATHESIS.

LITHIUM [symbol Li, at. wt. = 7.03 (O = 16) or 6.98 (H = 1)] occurs in combination with silica in many minerals, especially lepidolith and tourmalin, from California. It is found, as the chloride, in a number of mineral springs, the richest being one at Redruth in Cornwall (England), which is said to produce 400 kilograms, nearly 1,000 lbs., each 24 hours. Small quantities of lithium are found in the ashes of many plants, especially tobacco, and it also occurs in milk, blood, and in certain meteorites. These facts show its wide distribution, but it is not a plentiful substance. The metal is produced by electrolysis of the chloride in solution of pyridine or acetone, and is silvery white and highly lustrous. Its hardness is between that of potassium and lead; it melts at 186° C., but cannot be distilled. In general properties lithium resembles sodium or potassium; it is the lightest metal known. Specific gravity = 0.59. When heated in air it burns with an intense white light, and it is usually monovalent in its compounds. *Lithium Chloride,* LiCl, resembles common salt; the *carbonate,* Li_2CO_3, is the most technically important salt on account of its medicinal use in the treatment of diseases connected with the production of excessive amounts of uric acid, such as rheumatism, or gout. Its employment in this connection is based upon the fact that lithium is practically the only metal with which uric acid forms a *soluble* salt, and, as lithium salts exert very little physiological activity, it is *possible* that sufficiently large quantities of them may be administered to remove uric acid from the muscular tissues. The 'lithia tabloids' usually sold consist of lithium carbonate and tartaric or citric acid, so that they effervesce when mixed with water. This improves their taste and adds to their price, but does not increase their physiological effect. Lithium salts are also used, to some extent, in photography and in the manufacture of fireworks, on account of the intense red color which the volatile compounds of the metal impart to a non-luminous flame. The production of this color, and the fact that the carbonate is sparingly soluble, are the two most convenient means of detecting the presence of lithium. *Lithia* is the term still applied sometimes to *Lithium Hydroxide,* LiOH, which resembles caustic soda. It attacks and corrodes the skin nearly as rapidly as this latter substance, and consequently it is hardly necessary to say that it is wholly absent from the 'lithia tabloids' mentioned above. Very recently Sir William Ramsay has announced the fact that lithium salts, and probably also those of potassium and sodium, are formed by the action of the *radium emanation,* which is a gas (see RADIUM) on solutions of copper sulphate or nitrate. After removal of the excess of the copper compounds, the metals mentioned remain in solution as salts

and are obtained when the liquid is evaporated. If this observation is confirmed, it is the most important ever made during the history of chemistry. It means that, under the influence of the enormous energy contained in the emanation, the *element copper* is transformed into the *element lithium*, and possibly also into sodium and potassium. It is, perhaps, hardly necessary to say that this is the first authentic instance of the transformation of one element into another.

LITHOBIBLION, n. *lĭth-ō-bĭb'lĭ-ŏn* [Gr. *lithos*, a stone; *biblion*, a book]: species of schistous, usually calcareous stone, having the figures of leaves between the laminæ; called also bibliolite and book-stone.

LITHOCARP, n. *lĭth'ō-kârp* [Gr. *lithos*, a stone; *karpos*, fruit]: a fossil fruit, now usually called a *carpolite*.

LITHOCHROMATICS, n. plu. *lĭth'ō-krō-măt'ĭks* [Gr. *lithos*, a stone; *chroma*, color]: the art of painting in oil upon stone, and taking impressions therefrom upon canvas.

LITHODOMUS, n. *lĭth-ŏd'ō-mŭs*, LITHODOMI, n. plu. *lĭth-ŏd'ō-mī* [Gr. *lithos*, a stone; L. *domus*, a house]: genus of mollusks, of the family of mussels, whose type is *Mytilus lithophagus* of Linnæus (see LITHOPHAGI): they bore into rocks and stones, and form for themselves permanent lodgments. LITHOD'OMOUS, a. *-mŭs*, pertaining to.

LITHOGENOUS, a. *lĭth-ŏj'ĕ-nŭs* [Gr. *lithos*, a stone; *genos*, birth, a race]: applied to animals which secrete or build up stony structures, as the coral-polyp.

LITHOGRAPH, n. *lĭth'ō-grăf* [Gr. *lithos*, a stone; *graphō*, I engrave or write]: a print from lettering, or from a drawing, which has been impressed on a prepared stone: V. to place or impress letters or drawings on stone and then transfer them to paper by printing with a press. LITH'OGRAPHING, imp. LITH'OGRAPHED, pp. *-grăft*. LITH'OGRAPH'IC, a. *-grăf'ĭk*, or LITH'OGRAPH'ICAL, a. *-grăf'ĭ-kăl*, pertaining to lithography. LITH'OGRAPH'ICALLY, ad. *-kăl-lĭ*. LITHOGRAPHY, n. *lĭth-ŏg'ră-fĭ*. LITHOG'RAPHER, n. *-ră-fẽr*, a writer or designer on stone; a workman who takes impressions from lithographic stones. LITHOGRAPHIC LIMESTONE or SLATE, a peculiar magnesian limestone, slaty, compact, and fine-grained—extensively employed in lithography.

LITHOGRAPHY may be divided into two distinct branches—lithography proper, the art of writing, drawing or engraving on stone, and chemical or surface printing from stone or metal, by means of which such writings, drawings or engravings are multiplied, in a manner differing essentially from letter-press or relief printing on the one hand and steel and copper plate or intaglio printing on the other. Lithographic printing is based upon the chemical principle of antagonism of grease and water and upon the porous nature of the printing sur-

face. By virtue of this property, a drawing made upon such surface with unctuous ink or crayon will adhere to it so firmly that its eradication can only be effected chemically by means of strong acids or mechanically by entirely removing the surface with the design. The parts of the surface containing the drawing or design will accept and hold grease or ink, and those parts of the surface free from design will receive and retain water to the evaporating point. Thus if a roller covered with fatty printing ink is passed over the printing surface previously moistened, the ink will attach itself only to the parts constituting the design and will be repelled by the moisture covering the remaining part of the surface, in consequence of which the design only will appear in the impression.

History.—Aloys Senefelder is generally conceded to be the inventor of lithography, although in certain quarters claims have been put forth in favor of Simon Schmidt of Germany. The latter's claims, however, are without much basis. As early as 1788 he printed from stone, but his idea bore no relation to Senefelder's discovery, ten years later, of chemical or surface printing. Schmidt merely substituted stone for metal in relief printing, which bears no resemblance whatever to the process of lithography. Senefelder was born at Prague in 1771. He early became familiar with the printing art, and later purchased a small press. Too poor, however, to pay for the engraving of his compositions, he next turned his attention to etching on copper. His inexperience in forming the reversed characters on the plate led to frequent errors, and not being familiar with the 'stopping out' solution used by etchers in rectifying mistakes, he succeeded in devising one of his own. The ingredients he used were those nearest at hand—the wax with which he coated the plates previous to etching, the soap with which he washed the ink from the plates and the lampblack which he used in preparing his ink for printing. Thus accidentally he discovered the composition which forms the basis of all crayons and lithographic drawing inks. The labor attached to grinding and repolishing the copper plates led him to experiment with a fine piece of Kellheim stone, originally purchased to grind his ink with. After treating this in precisely the same way as copper plates, he succeeded in getting some fairly good impressions. Subsequently it occurred to him to reverse the etching process by writing on the stone with the 'stopping out' composition and biting down the surface with aqua fortis. This brought out the character in relief, which he inked in and printed in the manner of type. Further experiments led to the discovery that relieving the characters was altogether unnecessary and that the simple process of writing on the stone with his composition of wax, soap and lampblack, produced the same results. This was in the year 1798, but it was not

until eight years later that the inventor succeeded in establishing himself as a lithographic printer in Munich. This city thus became the centre of the art, and three years thereafter no fewer than seven separate concerns were established, as well as a number of private presses. Senefelder died in 1834, and since then there has been little or no change in the method he laid down, the inventor having exhausted almost its entire possibilities. While to Senefelder is due the lion's share of praise, many others of the early lithographers are entitled to great credit, they having done much to develop and foster the craft. Piloty in 1808 published 432 copies of the old masters, and in 1815 reproductions from the Munich gallery. His partner, Lochle, was also conspicuous in the early development of lithography, as well as Count Lasteyrie, who introduced the art in Paris. It fell to Godfrey Engelmann to found the first permanent establishment in Paris. This was in 1816. In 1837, he was granted letters-patent on the invention of chromolithography. The first house in Berlin was established in 1834 by Franz Hanfstängel, and in London in 1822 by Hullmandel, a pupil of Engelmann of Paris. Senefelder himself attempted to establish himself in London, but failed, owing to some difficulty with his partner, André, of Offenbach.

Lithography as an art reached its climax in Paris during the reign of Louis Philippe. Among the masters who distinguished themselves were the satirists Daumier, Grandville, Travies and Gavarni, Deveria, Delacroix, Johannot and Cigoux, the delineators of romantic literature; Charlet and Raffet, who found material in the glorification of Napoleon's career. Other painter-lithographers of the day were Géricault, Richard Park Bonington, James Duffield Harding, Eugene Isabey, Alexandre Calame and Julien, whose *Etudes en Deux Crayons* made him famous. Since the introduction of the power press and the consequent development of the lithographic industry as a commercial factor, the medium of lithography has found less favor as a mode of artistic expression, but efforts are now being made to create renewed interest in an art so true in its reproduction of the artist's pencil. Commercially it has grown to be one of the most important branches of the printer's craft, as evidenced by the fact that in the United States alone, according to the census of 1900, the capital invested was $22,676,142, and employment was given to almost 14,000 people.

Materials.—The stone used for purposes of lithography is a compact, homogeneous limestone of porous texture, known as 'lithographic stone.' It varies in color from a light cream, dull yellow, drab or gray to darker shades of the same colors, the best being found among the light gray varieties. Owing to the expense incurred in handling and storing the cumbersome stone and the preva-

lence of flaws in them, a substitute embodying the same properties has been the desideratum of lithographers almost since the invention of surface printing. Metals and other materials, as well as artificial stones, have been tried, but none were found suitable, until with the introduction of aluminum as a trade article, experiments with that metal were made by John Mullaly, of New York, and later by Otto C. Strecker, of Maintz, Germany, resulting in the almost universal adoption of this metal as a perfect substitute for the lithographic stone. Designs can be removed from either stone or metal plates and their surfaces prepared for the reception of new designs. A stone 4 inches thick or an aluminum plate $\frac{29}{1000}$ of an inch thick can thus be used approximately 200 times. Lithographic crayon is composed of beeswax, shellac, tallow, mastic turpentine, soap and lampblack. It is made in several degrees of hardness. For crayon work the surface of the stone is always grained by means of grinding with clean, sharp sand and water between two slabs of stone. Lithographic ink adapted for pen work on stone contains the same ingredients as used for the crayon with a larger quantity of the soap, in order to make it soluble in water. The ink is furnished in sticks and rubbed over a plate or saucer and then gradually dissolved with water or turpentine until it becomes fluid. Gum arabic and acids are important factors in lithography; in fact, Senefelder's original invention would have proved of little practical value had he not also discovered their uses in reinforcing the qualities of the stone. When a drawing is completed on stone, its surface is treated with a solution of gum arabic and nitric acid, effecting a chemical change in its nature where it is not protected by the grease or ink of the drawing. The carbon is freed and a nitrate deposited in the form of a full grained pellicle, the pores of which retain the gummed water, thus creating a surface impermeable to grease. Furthermore, the drawn parts are rendered insoluble in water by decomposing the alkali contained in the soap—one of the component parts of lithographic crayon or ink. The object of this etching is not to elevate the drawing—the relief, if any be obtained, being hardly perceptible, and although it tends to make the impression cleaner and sharper, is not absolutely necessary.

Process.—After the stone is etched, it is washed successively with water and turpentine. When wiped clean, the surface at first glance appears to be perfectly blank, but on closer inspection shows a faint suggestion of the design in white on the face of the stone. After being repeatedly moistened and rolled in with printing ink, the design reappears and accepts the ink. It is then covered with a weak solution of gum arabic and is ready for printing. A drawing on stone is necessarily reversed and it requires considerable experience on the part of the

artist to obtain proficiency in thus rendering a reverse facsimile of the original. In the hands of an experienced and capable artist no reproductive art can offer greater possibilities than that of crayon drawing on a grained stone. It permits greater freedom as compared with steel, copper plate or wood engraving, inasmuch as technique is less important in lithographic crayon work than true artistic ability, while an infinite variety of tones, from the most delicate shade to rich, deep black, lies within its possibilities. Somewhat more mechanical is the pen stipple manner, which, as its name implies, consists of drawing with small dots, the relative values of shading being determined by the varying density of the dots. This manner is employed mainly in chromo-lithography, its chief recommendation being the clean, sharp, solid nature of the work, and it is therefore particularly adapted to large editions of printing. The greatest achievement of lithography undoubtedly centres in the reproduction of oil paintings and aquarelles, commonly known as chromo-lithography. Either the crayon or pen stipple manner alone or both together, in connection with other manners, such as 'rub tints,' 'asphalt tints,' etc., are brought into the work. Its most simple form is the tint used for crayon drawings; its highest, the reproduction in colors of an oil or water color painting, requiring a series of drawings on separate stones—one for each of the colors necessary to produce the facsimile. The important feature is to obtain a perfect register of the various printings, as any deviation of the correlation of the colors will tend to produce entirely foreign effects. One of the methods whereby this is accomplished is making a key plate. An accurate detailed tracing is made of the original by means of an engraving-needle, scratching the surface of a sheet of transparent gelatine or celluloid, indicating the boundaries of even the most minute patches of color. The engraved lines are charged with lithographic ink and then transmitted to stone by pressure. After the register marks (usually in the shape of crossed lines) have been put in the margins of the key plate, the stone is etched and rolled up with printing ink, and impressions corresponding, to the number of colors or printings to be employed are made therefrom. The impressions are powdered with finely ground dry powder (usually Venetian red), which adheres only to the outline of the design, and then transmitted by pressure to the surface of clean stones. These so-called 'offsets' of the key serve as a guide for the artist in making his color plates. In cases where no key of the original is made, offsets from the drawing of the black supplied with the necessary register marks answer the same purpose. The number of colors necessary to produce a given result varies largely, according to the nature of the original to be reproduced, ranging for commercial purposes from three to fifteen,

although where especially fine results are desired, 20 or more colors may be required. The stone-engraving manner—used extensively for commercial stationery in imitation of steel engraving—is based on the same principle, although the mode of procedure differs in every respect. For this purpose the stone is polished, its whole surface is first prepared or etched with gum-water acid and covered with a dark ground consisting of lampblack in solution with gum-water or albumen. Into this ground the design is engraved or scratched with an engraving-needle or a diamond. Then linseed oil is poured over the whole, which is absorbed by the stone where the needle has laid it bare. The ground is washed off, the surface moistened and printing ink rubbed in with a tampon or dauber, the ink adhering only to the lines of the design, by reason of the oil which they have absorbed.

Photography.—Since its invention, photography has been more or less allied to the lithographic art. Its most common application is the process called 'photo-lithography,' by means of which pen drawings are transferred to lithographic stone at comparatively small expense. The half-tone or Meisenbach process has also been advantageously applied—particularly in chromo-lithography—in furnishing a basis for the several color plates, in place of the key, usually assuring a more faithful reproduction of the original than would be possible otherwise. One of the earliest photo-lithographic processes in use is that of Lemercier, patented in 1852, which is based on the sensitive property of asphaltum, discovered by Niepce in 1833. A lithographic stone is coated with a solution of asphaltum in oil of lavender and exposed to light under a half-tone negative, the film of which has been turned on the glass to secure the necessary reversed position, effecting a slow change in the asphaltum. The parts thus affected by the light become insoluble in turpentine, leaving the other parts soluble. Thus a (reversed) positive is rendered on stone, which, owing to the unctuous nature of its composition, can be prepared for printing purposes in the usual manner. The method most commonly used is the albumen process, invented by Poitevin in 1855. In this case the stone is coated with albumen in solution with bichromate of potassium, which is much more sensitive to light action than asphaltum. After exposure the stone is immediately covered with printing ink, to prevent further action, and washed with water, which removes the parts that remain soluble, while the ink adheres only to the parts that have become insoluble.

Transferring Process.—Unless limited editions are required, designs that have been drawn or engraved on stone are very rarely printed from directly. By means of the transferring process one design may be reproduced as many times as the relative size of the work and sheet to be printed will allow—ensuring greater economy in

printing and greatly reducing the risk of damage to the original drawing stone. Transfer impressions are taken on a paper coated with a sizing of starch and glycerine, with a specially prepared ink. These impressions are laid in their proper position on a sheet of paper of the required size and fastened to it by means of pricking with the dull point of an engraving-needle. The sheet, the transfers adhering, is laid face down on a clean, polished stone or aluminum plate and repeatedly pulled through a hand-press, until the transfers adhere firmly to the stone, the paper being frequently dampened during this process. This done, the sheet is carefully raised from the stone, leaving the thin paper transfers still adhering to its surface. These then in turn are dampened and carefully removed. A weak solution of gum and water is applied and the stone rolled up repeatedly with printing ink. To make the transfer ready for printing, it is etched in the same manner as an original drawing. In chromo-lithography the first transfer made is always that of the key-plate, supplied with register marks. The impression from this transfer is mounted on a sheet of aluminum or zinc and coated with shellac to ensure against stretching or shrinking. All succeeding transfers are 'stuck-up' or fixed on this key-sheet, in order to enable an accurate register of the colors.

Lithographic Printing.—The lithographic hand-press differs essentially from both the type and copper-plate hand-presses, a scraper being used instead of the vertical pressure of the platen. It consists of a frame provided with rollers on which the bed runs to and fro, the scraper or impression-bar and a tympan of leather, fitted to an iron frame hinged to that end of the bed nearest the scraper. The scraper consists of a flat piece of box-wood, beveled on both sides and covered with leather. The manner of printing is as follows: the stone with the design upon it is placed face up upon the movable bed, then moistened with a sponge, rolled up with ink and the sheet which is to take the impression laid thereon. Several sheets of paper are placed over it to secure the necessary backing, the tympan lowered upon it to cover the entire bed and stone, and the carriage brought forward under the scraper. Pressure is applied by means of a hand-lever at the side of the press, and the entire length of the bed passed under the impression bar. The pressure is then released, the bed brought back to its original position, the tympan raised and the printed sheet taken off. Until the introduction of the lithographic power-press in 1867, this method of printing was exclusively used for lithographic printing. At the present time its only utility is for the purpose of making artist-proofs and transfers for printing on power-presses. The lithographic power-press differs but slightly from that of the typographic power-press. The principle of operation remains the same, taking in place of the letter-press

form a lithographic stone in its bed and being supplied with a contrivance for distributing the moisture with which the stone must be covered before the ink is applied. The use of rotary printing-presses, with an increased speed of 50 per cent over the flat-bed presses, has been made possible by the substitution of the flexible aluminum plate for lithographic stone, and has opened the field of multi-color printing by the lithographic process, whereby two or more colors are printed in rapid succession before the sheet is delivered. The rotary press consists principally of two cylinders—one to hold the plate and the other to furnish the pressure—and is supplied with a mechanism similar to that of the flat-bed press for distribution of moisture and ink. Rotary presses having two and three plate cylinders and printing respectively two and three colors each time a sheet is fed are already largely in use, and four-color presses are now being built on the same general principle.

Bibliography.—Bergman, *Das Ganze des Steindrucks, nebst Anhang von der Zinkographie* (1843); Bregeant, *Nouveau Manuel complet de l'Imprimeur Lithographie* (1850); Engelmann, *Traité theorique et pratique de lithographie* (1849); Richmond, *Grammar of Lithography* (1879, 1880, 1881, 1883 and 1885); Weishaupt, *Das Gesammt Gebiet des Steindrucks, nebst Anhang von der Zinkographie* (1865); Weishaupt, *Theoretisch-praktische Anleitung zur Chromolithographie* (1847).

LITHOIDAL, a. *lĭth-oy'dăl* [Gr. *lithos,* a stone; *eidos,* resemblance]: stony in appearance or structure.

LITHOLAPAXY: lithotrity completed at one sitting and followed at once by washing out the bladder. See LITHOTRITY.

LITHOLATRY, n. *lĭth-ŏl'ă-trĭ* [Gr. *lithos,* a stone; *latreia,* worship]: the worship of stones of particular shapes.

LITHOLOGY, n. *lĭth-ŏl'ŏ-jĭ* [Gr. *lithos,* a stone; *logos,* discourse]: department of geology which treats of the physical characteristics of rocks and strata, i.e., their constitution and structure, without reference to the fossils that they may contain or to their relations in time or position to each other. LITHOLOGIC, a. *lĭth-ō-lŏj'ĭk,* or LITH'OLOG'ICAL, a. *-lŏj'ĭ-kăl,* pertaining to. LITH'OLOG'ICALLY, ad. *-kăl-lĭ.* LITHOL'OGIST, n. *-ŏl'ŏ-jĭst,* one who is skilled in the science of stones.

LITHOLYSIS, n. *lĭth-ŏl'ĭs-ĭs* [Gr. *lithos,* a stone; *lŭsis,* a loosening or release]: solution of a stone in the bladder.

LITHOMANCY, n. *lĭth'ō-măn-sĭ* [Gr. *lithos,* a stone; *manteia,* divination]: divination by means of stones.

LITHOMARGE, n. *lĭth'ō-mârj* [Gr. *lithos,* a stone: L. *marga,* marl]: earthy mineral, sometimes called *Mountain Marrow* (Ger. *Steinmark*), consisting chiefly of silica

and alumina, with oxide of iron and various coloring substances. Several varieties of clay are included under the term. It is soft, greasy to the touch, and adheres strongly to the tongue. It is generally white, yellow, or red, often exhibiting very beautiful colors. It is found in Germany, Russia, etc., also in the tin-mines of Redruth in Cornwall. It arises in some cases from the decomposition of felspathic rocks, as in kaolin or china-clay, and in others from the deposition of aluminous springs.

LITHOPHAGOUS, a. *lĭth-ŏf'ă-gŭs* [Gr. *lithos*, a stone; *phagō*, I eat]: eating or swallowing stones or gravel, as certain birds. LITHOPH'AGI, n. plu. *-ă-jī*, also LITHOPHAGIDÆ, stone-eaters; the same as *lithodomi:* see PHOLAS.

LITHOPHANE, *lĭth'ō-fān* [Gr. *phanos*, clear, transparent]: peculiar style of ornamental porcelain adapted chiefly to lamps and other transparencies; it consists of pretty pictures produced on thin sheets of white porcelain by stamping the porcelain, while still soft, with raised plaster-of-Paris casts of the pictures intended to be produced. By this means, an intaglio impression is obtained; and when the sheet of porcelain has been hardened by fire, the impression gives a picture, which, owing to the transparency of the porcelain, has the lights and shadows correctly shown, as viewed by transmitted light. Lithophane pictures are common in Germany, where the art has been more favorably received than in France, its native country. They are set in the sides of ornamental lamps and lanterns, and sometimes in decorative windows.

LITHOPHOTOGRAPHY, n. *lĭth'ō-fō-tŏg'ră-fĭ* [Gr. *lithos*, a stone; *phos*, light; *phōtŏs*, of light; *graphō*, I write]: the art of producing prints from lithographic stones by means of photographic pictures developed on their surface.

LITHOPHYL, or LITHOPHYLL, n. *lĭth'ō-fĭl* [Gr. *lithos*, a stone; *phullon*, a leaf]: the figure of a leaf on fossils.

LITHOPHYTES, plu. *lĭth'ō-fīts*, or LITHOPHYTA, n. plu. *lĭth'ŏ-fī'tă* [Gr. *lithos*, a stone; *phuton*, a plant]: stone-plants, applied to those polyps which secrete a stony axis, as the corals. LITH'OPHY'TIC, a. *-fī'tĭk*, or LITH'OPHY'TOUS, a. *-fī'tŭs*, pertaining to stone-corral.

LITHORNIS, n. *lĭth-ŏr'nĭs* [Gr. *lithos*, a stone; *ornis*, a bird]: in *geol.*, a term applied to certain bird-remains from the London or Eocene clay of the Isle of Sheppey.

LITHOTOMY, n. *lĭth-ŏt'ŏ-mĭ* [Gr. *lithos*, a stone; *tomē*, a cutting]: operation or art of cutting for stone in the bladder. LITHOTOMIC, a. *lĭth'ō-tŏm'ĭk*, pertaining to lithotomy. LITHOT'OMIST, n. *-mĭst*, surgeon who extracts stones from the bladder, by cutting it.—*Lithotomy* is a

surgical operation popularly called *cutting for the stone.* As most of the symptoms of stone in the bladder may be simulated by other diseases of the bladder and adjacent parts, it is necessary to have additional evidence regarding the true nature of the case before resorting to this serious operation. This evidence is afforded by *sounding* the patient—a simple preliminary operation, which consists in introducing into the bladder, through the urethra, a metallic instrument by means of which the stone can be plainly felt and heard.

Lithotomy has been performed in various ways at different times. The earliest form of lithotomy was known as *cutting on the gripe,* or *Celsus's method.* It received the former name from the stone, after being fixed by the pressure of the fingers in the anus, being directly cut upon and extracted; and the latter, from its having been first described, so far as is now known, by Celsus, though it had probably been practiced from time immemorial. At a later period, this operation received from Marianus the name *apparatus minor* (from a knife and hook being the only instruments used), to distinguish it from his own method, which he called *apparatus major,* from the numerous instruments employed. The *Marian method* was founded on the erroneous idea, that wounds of membranous parts would not heal, while their dilatation was comparatively harmless. The object was to do as little as possible with the knife, and as much as possible with dilating instruments; and the necessary result was laceration and such other severe injury, that this became one of the most fatal operations in surgery. Nevertheless, it was the operation mainly in vogue for nearly 200 years, till Frère Jaques, 1697, introduced what is essentially the method now in use.

The *lateral operation,* so called from the lateral direction in which the incision is made into the neck of the bladder, in order to avoid wounding the rectum, is that which, with various minor modifications, is now almost universally employed. Frère Jaques, a priest, seems to have learned the method from a provincial surgeon, Pierre France, and to have practiced it with much success; and, 1697, he came to Paris to make it publicly known. The advantage of this operation, by which a free opening, sufficiently large for the extraction of a stone, can be made into the bladder without laceration of the parts or injury to the rectum, was immediately recognized by the leading surgeons of the time, and the Marian process was at once universally given up. The following are the leading steps of the operation. The patient being laid on the table, and an anesthetic being administered, an instrument termed a curved staff, with a deep groove, is passed into the bladder. An incision is then made on the left side of the mesial line, about an inch and three-quarters in front of the anus, and extending downward to midway between the anus and the

tuberosity of the left ischium. The incision should be sufficiently deep for the operator, on introducing a finger of the left hand, to feel the groove of the staff. The knife, directed by this finger, is now fixed in the groove, and sliding along it toward the bladder, divides the membranous portion of the urethra, the edge of the prostate, and the neck of the bladder. The knife is now withdrawn, as also is the staff, and the surgeon introduces the forceps over the finger of the left hand into the bladder, feels for the stone, and draws it out. At first, the urine escapes through the wound, but in favorable cases it is voided by the natural passage in a week, and the wound heals in the course of a month.

From the shortness of the female urethra and the extent to which it can be dilated, and, additionally, from the comparative rarity of calculous affections in women, the operation of lithotomy is restricted to the male sex.

LITHOTRIPSY, n. *lĭth'ō-trĭp'sĭ*, or LITHOTRITY (q.v.), n. *lĭth-ŏt'rĭ-tĭ*, or LITH'ONTRIP'TY (q.v.), n. *lĭth-ŏn-trĭp'tĭ* [Gr. *lithos*, a stone; *tribō*, I grind or wear by friction]: the operation of crushing a stone in the bladder in order that it may be discharged with the urine. LITH'OTRIP'TIC, a. *-trĭp'tĭk*, pertaining to. LITH'OTRIP'TIST, n. *-tĭst*, or LITHOT'RITIST, n. one skilled in operating for stone in the bladder. See LITHOTRITY.

LITHOTRIP'TICS: remedies which, whether taken by the mouth, or injected into the bladder, act as solvents for the stone. Various medicines have at different times been recommended and employed as solvents for the stone. Rather more than a century ago, limewater and soap, swallowed in sufficient quantities, had high reputation as solvents for urinary calculi. These were the only active ingredients in Miss Stephens's *Receipt for the Stone and Gravel*, which was reported on so favorably by a committee of professional men, in England, that parliament, 1739, purchased the secret for £5,000. The treatment doubtless afforded relief; but there is no evidence that any calculus was actually dissolved, for in the bladder of each of the four persons whose cure was certified in the report, the stone was found after death. At present, no substance is known which, taken by the mouth, has the power of dissolving calculi. The relief which in many instances has followed administration by the mouth of substances supposed to be lithotriptics, has been derived not from the solution of the calculi, but from diminution of irritation and pain in the bladder.

On the other hand, considerable success has been obtained by direct injection of solvents into the bladder, especially when the nature of the calculus is suspected; weak alkaline solutions having apparently caused the disappearance of uric acid calculi, while phosphatic calculi have unquestionably been dissolved by the injection of very weak acid solutions.

LITHOTRITY, n. *lĭth-ŏt′rĭ-tĭ* [Gr. *lithos*, a stone; L. *tritus*, bruised or ground]: the operation of breaking and crushing a stone in the bladder so that its fragments may be discharged through the urethra with the urine. LITH′OTRITE, n. *-trīt*, instrument for doing this.—*Lithotrity* (known also as Lithotripsy, or Lithotripty), may be regarded as the discovery of a French surgeon, Civiale, who began his researches in 1817, but did not perform his first operation till the beginning of 1824. The need of such an operation had long been felt. The lithotrite, or instrument by which the disintegration of the stone is effected, is introduced in the same manner as a catheter or sound into the bladder, and, after catching the stone, either bores, hammers, or crushes it to pieces.

Crushing is now generally preferred, the stone being grasped by the blades of the instrument shown in the figure, one blade acting on the other by means of a screw.

The process seems, at first sight, so safe, as compared with the operation of lithotomy, that it is necessary to distinguish those cases in which it may be resorted to, and those in which it is contra-indicated. It may be resorted to when the patient is an adult, and the urethra full-sized and healthy, so as freely to admit the passage of the instrument; when the prostate is not much enlarged, which is very often the case in old men, and when the bladder is not thickened or very irritable: while it must be avoided in children, in consequence of the smallness of the urethra; when there is great irritation and thickening of the bladder; when there is great enlargement of the prostate, which hinders the manipulation of the instrument, and the escape of the broken fragments of stone; when the stone is of large size, as, for example, of a greater diameter than two inches; and when there is reason to believe that the concretion is a mulberry calculus, which, from its extreme hardness, cannot readily be broken. Great care must be taken that no fragment remains in the bladder, as such fragments are almost sure to form the nuclei of fresh calculi. For this reason it is the rule now to wash the bladder out thoroughly immediately after the crushing operation, so as to remove every fragment. Lithotrity was formerly performed at several sittings, a little of the stone being crushed each time and the resulting powder being removed in the urine in the interval. Now, in the procedure called LITHOLAPAXY (devised in 1878 by H. J. Bigelow, of Boston), the stone is broken into small fragments at one sitting, and all the fragments are washed out by means of a special form of syringe.

LITHUANIA, *lĭth-ū-ā′nĭ-a:* former grand-duchy, holding of the crown of Poland, which, before the partitions of that country, was composed of three groups of territory: 1. Lithuania proper, or Litiva, which formed the governments of Wilna and Troki; 2. The duchy of Samogitia; 3. Russian Lithuania, comprising Polesie, Black Russia or Novogrodek, White Russia or Minsk, Meislav, Witebsk, Smolensk, Polotsk, and Polish Livonia. This country contained about 135,000 English sq.m., and was partitioned between Russia and Prussia. The Lithuanians, a race to whom belong the Letts of Livonia, the Cours of Courland, and the ancient inhabitants of e. Prussia, are closely allied to the Slavic peoples, and constitute with them one of the main divisions of the Indo-European stock. The Lithuanian language is still spoken but is dying out before German and Russian; in some respects it comes nearer Sanskrit than any other Aryan tongue.

Lithuania was at first subject to Russia, but shook off the yoke about the end of the 12th century, and became an independent power. The nation was not converted to Christianity till the end of the 14th century. Their rulers, who bore the title of Grand Duke, conquered the neighboring Russian provinces, and even carried their ravages to the very gates of Moscow. The Grand Duke of Lithuania, Jagellon, was 1386 elected king of Poland, and issued an edict of union between the two countries, and 1569 the two were declared to be one country.

LITIGATE, v. *lĭt′ĭ-gāt* [L. *litigātus,* disputed, quarrelled—from *lis* or *litem,* strife, a lawsuit: It. *litigare*]: to contest or dispute in law; to engage in a lawsuit. LIT′IGATING, imp. LIT′IGATED, pp. LIT′IGANT, n. *-gănt,* one who contends in law. LIT′IGA′TION, n. *-gā′shŭn,* the act of carrying on a suit at law for the recovery of a right or claim. LITIGIOUS, a. *lĭ-tĭj′ŭs* [F. *litigieux*—from L. *litĭgĭōsus,* contentious]: given to carrying on lawsuits; contentious. LITIG′IOUSLY, ad. *-lĭ.* LITIG′IOUSNESS, n. *-nĕs,* the disposition of being prone to carry on lawsuits.

LITMUS, n. *lĭt′mŭs* [Dut. *lakmoes,* an infusion of a lake or purple color—from *lak,* lac, and *moes,* pottage, pulp]: purple coloring matter prepared from several lichens, but chiefly from *Lecanora tartarea.* The lichens are powdered and digested with ammoniacal fluids, e.g., urine, till they undergo decomposition. Alum, potash, and lime are then added, and the mixture is allowed to stand till the maximum degree of color is observed. Sand and chalk are added, to give a due degree of solidity, and the mass is then dried in cubes, and is ready for the market. The pigment is originally red, and becomes blue only on the addition of alkalies or of lime. This blue color is again changed into a red, on addition of a free acid. LITMUS-PAPER, unsized paper, colored

blue with litmus, and used as a delicate test of the presence of acids, the feeblest acid turning litmus-paper to a red color, which is restored by an alkali to its original blue color. See TEST-PAPERS.

LIT'OLFF, HENRY CHARLES: European composer and pianist: b. London 1818, Feb. 6; d. Paris 1891, Aug. 6. He studied pianoforte playing under Moscheles, and made his first public appearance as a pianist at the Covent Garden Theatre, London, in 1832. At 17 he went to France and for some time lived a wandering life, traveling in France, Holland, and Germany, giving concerts. In 1851 he settled in Brunswick, married the widow of the music-publisher Meyer, and took control of the business; later he transferred the management of affairs to his adopted son, who began the publishing of cheap editions of classical music. In 1860 he moved to Paris, and married the daughter of the Count de la Rochefoucauld. His compositions include piano pieces (including the *Spinnlied*); symphony concertos; and the operas *Héloise et Abelard; Die Braut von Kynast; Les Templiers,* and *King Lear.* As a pianist he showed feeling and brilliancy of execution, but was uneven, and sometimes inaccurate.

LITORN, n. *lĭt'ėrn:* a species of thrush.

LITOTES, n. *lī'tō-tēz* [Gr. *litotēs,* plainness, simplicity —from *litos,* plain, simple]: a figure of speech; a species of irony in which less is expressed than what is intended, as 'a citizen of no mean city'—that is, a city of considerable or great importance.

LITRAMETER, n. *lĭ-trăm'ĕ-tėr* [Gr. *litra,* a pound weight; *metron,* a measure]: an instrument for ascertaining the specific gravity of fluids.

LITRE, n. *lē'tr* [F.—from Gr. *litra,* a pound weight]: unit of the present French measures of capacity, both dry and liquid. It is the volume of a cubic decimètre (see MÈTRE), and is equal to 0.2200967 British imperial gallon, or about 1.76 Eng. pints. It is subdivided decimally into the *decilitre, centilitre,* and *millilitre* (respectively $\frac{1}{10}$, $\frac{1}{100}$, and $\frac{1}{1000}$ of a litre). Ten litres are a *decalitre;* 100, a *hectolitre;* 1,000, a *kilolitre.* The hectolitre is the common measure for grain, and is equal to 0.3439009 British imperial quarter, or nearly $2\frac{3}{4}$ imperial bushels. See METRIC SYSTEM.

LITTER, n. *lĭt'ėr* [F. *litière,* the bedding of cattle, a covered couch—from *lit,* a bed: mid. L. *lectārĭă,* a litter —from L. *lectīcă,* a couch, *lectus,* a bed]: straw, hay, and the like, used as a bed for horses, etc.; a framework supporting a sort of bed which may be borne by men or a horse; things strewed about in confusion; a condition of disorder or confusion: V. to cover or supply with straw or litter; to strew or scatter things about in confusion. LIT'TERING, imp. LITTERED, pp. *lĭt'ėrd.*

LITTER, n. *lĭt'ėr* [Icel. *látr* and *láttr*, a place where animals produce their young; *latrask*, to litter—from *lag*, a layer]: a brood of young pigs, kittens, and the like: V. to bring forth young, applied to small quadrupeds. LIT'TERING, imp. LITTERED, pp. *lĭt'ėrd*. *Note.*—This entry has hitherto been accepted as having the same origin with LITTER 1, but it has now been separated from LITTER 1 as really a different word, though confused with it: comp. prov. Eng. *lafter*, eggs laid by a hen.

LITTÉRATEUR, n. *lĭt-tā-râ-tėr'* [F.—from mid. L. *litteratōrem*, a man of letters]: a literary man; one devoted to literature, whether man or woman.

LITTLE, a. *lĭt'l* [AS. *lytel;* Goth. *leitils;* Icel. *litill;* Dut. *luttel*, little]: small in bulk, size, duration, or quantity; low in degree; trifling; not much: N. a small portion or quantity; small space: AD. in a small degree or quantity; in some degree but not great; not much: *compar.* LESS, or LESSER, *lĕs*, or *lĕs'ėr; superl.* LEAST, *lēst*. LIT'TLENESS, n. *-nĕs*, smallness of bulk; meanness; want of dignity. A LITTLE, by a small degree; to a limited extent; for a short time; not much. BY LITTLE AND LITTLE, slowly decreasing or increasing. LITTLE BY LITTLE, gradually; by small degrees. LITTLE-GO, *lĭt'l-gō*, in *familiar slang*, the first university examination for undergraduates at Cambridge. THE SMALLS is the corresponding slang term for the same at Oxford.—SYN. of 'little, a.': small; minute; diminutive; short; brief; insignificant; contemptible; inconsiderable; weak; slight; narrow; mean; penurious.

LIT'TLE, GEORGE: 1754, Apr. 10—1809, July 22; b. Marshfield, Mass.: naval officer. At the beginning of the revolutionary war he was placed in command of the Mass. armed schooner *The Boston;* in 1779 became 1st lieut. on the *Protector;* soon afterward was captured by the British and imprisoned in Plymouth, England, whence he escaped; and on his return to the United States commanded the *Winthrop* till the end of the war. He was appointed commander of the U. S. frigate *Boston* 1798; commissioned captain in the navy 1799, Mar. 4; captured several armed French ships; and was retired from the service 1801, Oct. 22. He was author of *The American Cruiser*, and *Life on the Ocean, or Twenty Years at Sea* (1844-5).

LITTLE, JAMES STANLEY: English writer on literature and art: b. Herne Hill, Surrey. He has lectured in England, on South Africa and imperial federation, edited *African Review* (1895-7, and 1901-2), and has published *A World Empire* (1879); *South Africa* (1884); *What is Art* (1884); *The United States of Britain* (1887); *A Vision of Empire* (1889); *The Progress of the British Empire in the Century* (19th Century Series) (1901); etc.

LITTLE BLUE CREEK: a small stream in Jackson co., in the w. part of Missouri. A contest occurred in 1864, on the banks of this stream, between Federal troops under General Curtis and Confederate troops under General Sterling Price. The contest lasted several hours, when the Confederates fell back on Big Blue creek, in the same co., and made a strong resistance. The Union cavalry, under General Pleasanton, finally routed the Confederates, who retreated into Arkansas.

LITTLE COLORADO: a river which has its rise in the western part of New Mexico, and flows s.w. into Arizona, where the course changes n.w. to its junction with the Colorado river. The amount of water is sometimes large, but again the river resembles a chain of small lakes or ponds, with dry or nearly dry river beds in many places. The river is about 230 m. long. It flows a little s. of the southern boundary of the Navajo Indian Reservation, around the region where many 'Cliff Dwellers' once lived in Arizona, and on through arid wastes and among low mountains to near the Colorado, where it enters a deep cañon, through which its waters flow into the Colorado just at Marble Cañon.

LITTLE CORPORAL, THE: a name bestowed upon Napoleon by his admiring soldiery after the battle of Lodi, in affectionate allusion to his small stature.

LITTLE DORRIT: a novel by Charles Dickens (q.v.) published in 1856. There is but a slight plot to the story, which contains more than 50 characters.

LITTLE E'GRET: any of several small, white herons. See EGRET; HERON.

LITTLE FALLS: city and county-seat of Morrison co., Minn., on the Mississippi river, and on the Northern Pacific railroad; about 100 m. n.w. of St. Paul. The place was settled in 1856, and in 1889 was incorporated. A dam across the river aids in furnishing extensive water-power. It is situated in an agricultural and lumbering region. Its chief manufactures are flour, lumber, machine-shop products, paper, bricks, beer, and dairy products. It is the commercial centre for a large part of Morrison and adjoining counties. It has a fine courthouse, St. Gabriel's Hospital, St. Otto's Orphan Asylum, a city library, and several good school buildings. Pop. (1900) 5,774; (1910) 6,078.

LITTLE FALLS: city in Herkimer co., N. Y., on the Mohawk river and the Erie canal, and on the West Shore and the New York Central & H. R. railroads; just midway between Albany and Syracuse. Where the city is now was once the site of an Indian village, and was visited in the 17th century by missionaries. A white settlement was made here about 1770 or a few years later. In 1782 this settlement was destroyed by Indians and Tories, and no successful efforts were made to rebuild until 1790, when a colony of Germans took possession

The place was incorporated as a village in 1811; the incorporation was changed in 1827. It became a city in 1895. The city gets its name from the falls, or series of cascades in the river, which descends 45 ft. in less than a mile. General Herkimer, a revolutionary officer, is buried in a cemetery near the city.

Little Falls is situated in a grazing region noted for its dairy products; but the city is noted for its manufactories. The country around is rolling and is diversified by many low hills, but along the Mohawk, where Little Falls stands and in the vicinity, there are peculiar rock formations. The chief manufactures are knit-goods, paper, carriages, bicycles, leather, knitting machinery, foundry and creamery products, and book-cases. There are about 2,500 employees in the manufacturing establishments. The two banks have a combined capital of $350,000; the annual amount of business is about $2,750,000. The city has a number of fine church buildings, a city hospital, a public school library, an excellent high school, public and parish schools, and a number of fine public and private buildings. Pop. (1900) 10,381; (1910) 12,273.

LIT'TLEFIELD, Walter: American journalist: b. Boston 1867, Mar. 17. He was educated at Harvard and has been since 1897 on the editorial staff of the New York *Times*. He is the American correspondent of *Le Siècle*, Paris, and the author of *The Truth about Dreyfus*. He has edited *The Letters of an Innocent Man* (Dreyfus) (1898); *The Power of Sympathy* (1892); *Early Prose Writings of James Russell Lowell* (1902); *Bismarck's Letters to his Wife from the Seat of War 1870-71* (1903); and has translated Noussanne's *The Kaiser As He Is* (1905).

LITTLE GIANT, The: a familiar name applied to Stephen A. Douglas (q.v.) by his political admirers in allusion to his small stature and great intellectual capacity.

LIT'TLEHALES, George Washington, C.E.: American hydrographic engineer: b. Schuylkill co., Pa., 1860, Oct. 14. He was graduated from the United States Naval Academy in 1883. He is an associate editor of the *International Journal of Terrestrial Magnetism*, and has published, *The Development of Great Circle Sailing; The Methods and Results of the Survey of Lower California; The Magnetic Dip or Inclination; The Azimuths of Celestial Bodies; The Azimuth and the Howe Angle* (1903); *Altitude, Azimuth, and Geographical Position* (1906); and other works, all published by the United States Navy Department.

LITTLE HUM'BOLDT RIVER: principal tributary of the Humboldt river, in Humboldt co., Nev. It flows w. and then s. through Paradise Valley, and joins the Humboldt above Winnemucca; elevation 4,500 ft. It

drains 35,000 acres of bottom and 90,000 acres of bench lands, both exceedingly fertile, and its tributary brooks abound in trout.

LITTLEJOHN, *lĭt'l-jŏn*, ABRAM NEWKIRK, D.D., LL.D.: Bishop of the Prot. Episc. Church: b. Florida, N. Y., 1824, Dec. 13; d. Williamstown, Mass., 1901, Aug. 3. He graduated at Union College 1845; was ordained deacon in the Prot. Episc. Church 1848 and priest 1849; became rector of Christ Church, Springfield, Mass., 1850, St. Paul's Church, New Haven, 1851, and the Church of the Holy Trinity, Brooklyn, 1860; was elected president of Hobart College 1858 and bishop of central N. Y. 1868, but declined both offices; was lecturer on pastoral theology in Berkeley Divinity school seven years; and was elected first Prot. Episc. bishop of Long Island 1868 and consecrated 1869, Jan. 27. In 1874 he was appointed to take charge of the American Episc. churches in Europe, and gave a large part of his time and work to aid the construction of the Cathedral of the Incarnation and the organization of the Cathedral schools at Garden City (q.v.), erected by Mrs. Alexander T. Stewart as memorials of her husband. He was long a frequent contributor to the *Church Review*, and published *Conciones ad Clerum* (1880); *Individualism: Discourses before the University of Cambridge, England*, (1880); and *The Christian Ministry at the Close of the Nineteenth Century*, lectures before the Gen. Theol. Seminary (1884).

LITTLEJOHN, JOHN MARTIN, A.M., B.D., LL.B., PH.D., D.D., LL.D., M.D., D.O.: American physiologist and osteopathist: b. Glasgow, Scotland, 1867. He was graduated from the University of Glasgow, afterward studied theology and was ordained in 1886. He was a tutor in Glasgow University, principal of Rosemont College 1890, of Amity College, Iowa, 1894-7, and has been president of the board of trustees of the American School of Osteopathy, Kirksville, Mo., from 1900, and professor there from 1897-1900. He has published *The Political Theory of the Schoolmen and Grotius* (1894); *Text-Book on Physiology* (1898); *Lectures on Psycho-Pathology* (1900); *The Science of Osteopathy* (1902); *Treatise on Osteopathy* (1903); *The Theory and Practice of Osteopathy* (1907); etc. He is editor of the *Osteopathic World.*

LITTLE JOHN: one of the outlaw comrades of Robin Hood. He was famed for his strength and was the only one of the company who could approach Robin Hood in skilful handling of the bow. By some authorities his name is supposed to have been John Nailor.

LITTLE KANAWHA, *kă-nâ'wa:* a river which has its rise in the central part of West Virginia, flows w. and n.w., and enters the Ohio river at Parkersburg. It is about 100 m. long, has considerable rapidity in the

mountain section, and is of benefit as a route for the transportation of the oil and lumber of that portion of the states through which the river flows. It has been made navigable as far as Burning Springs, about 40 m. from Parkersburg.

LITTLE LORD FAUNT'LEROY: a popular story for children by Mrs. Frances Hodgson Burnett, originally published in 1885 as a serial in the magazine *Saint Nicholas.*

LITTLE MAC: a nickname applied by the soldiers of the Union army during the civil war to General George B. McClellan (q.v.).

LITTLE NELL: a child character in the novel *Old Curiosity Shop,* by Charles Dickens. She was reared amid vice and crime, yet preserved a beautiful purity of character.

LITTLE PHIL: a nickname given by his soldiers to General Philip H. Sheridan (q.v.) during the civil war.

LITTLE RED RIDING HOOD: a well known fairy tale which first appeared in Paris in 1697, in a collection of tales by Charles Perrault.

LITTLE ROCK: capital of the state of Arkansas, the seat of Pulaski co., and the largest city in the state; on the St. Louis, I. M. & S., the Rock Island, and the St. Louis S. railway systems; 133 m. e. of Memphis, 346 m. s.w. of St. Louis, 165 m. e. of Fort Smith, and 145 m. n.w. of Texarkana. Little Rock is situated on both banks of the Arkansas river. While the eastern border of the city touches rich alluvial cotton lands, without rocks and subject to a high state of cultivation, its western border reaches to the foothills of the Ozark Mountains. It is situated near lat. 35° and lon. 92°, almost at the centre of the state. The Arkansas river is navigable up to this point during the major portion of the year for large steamboats, while smaller vessels ply as far up as Fort Smith.

Manufactures.—The largest single industry is the manufacture of cottonseed-oil. There are four mills. Of other industries, besides domestic and jobbing shops such as clothing, food, plumbing, etc., the principal are foundries, railway shops, a cotton mill, ice and printing plants, four compress companies, beer and bottling works, and wagon shops. The census report shows that in 1900 the city contained 171 manufacturing establishments with $3,434,393 capital, employing 2,751 persons, paying $1,384,722 in wages, and $1,990,081 for materials, and having a total output of $4,723,118.

Banks.—There are three national banks with a capital stock of $1,100,000 and surplus of $538,489, and deposits amounting to $2,108,673. There are also several state and savings banks with deposits aggregating several million dollars. The local bank clearings for the year ending 1907 aggregated $75,232,300. Besides these,

there are 13 building and loan associations, all local, with aggregate stock amounting to $8,335,010, and loans in force aggregating $2,605,316.

Government and Finances.—All municipal corporations in Arkansas are governed by general laws, and not by special charter. The mayor, treasurer, police judge, city clerk, and city attorney, as well as the aldermen, are elected biennially. The city council is composed of the mayor and 16 aldermen, two of whom are elected from each of the eight wards. The ordinary expenses of the city, not including the schools, aggregate about $180,000, of which $37,225 were expended for the police department, and $36,504 for the fire department. The net public indebtedness is $108,000. The assessed valuation of real and personal property in 1907 was $18,260,660.

Churches and Charitable Institutions.—Little Rock is a city of numerous churches. There are 73 churches and chapels (of which 37 were colored) with a total membership of 13,600; the two strongest denominations being the Methodist and the Baptist. It is the seat of Roman Catholic and Protestant Episcopal cathedrals, St. Andrew's and Trinity. Other notable buildings are Christ Church (P. E.), the Eighth Street Methodist, the German Evangelical Lutheran, the First Presbyterian churches and the Jewish Temple. Of the charitable institutions the more notable are the county and city hospitals, St. Vincent's Infirmary, conducted by the Sisters of Mercy, the Children's Home, the Methodist Orphanage, the Jane Kellogg Home for Aged Women, and the Home for Aged Colored Women.

Buildings.—All of the state's public institutions except the University of Arkansas at Fayetteville and the Branch Normal Institute for colored youth at Pine Bluff are located here. These include the State House, the School for the Blind, the Deaf-Mute Institute, the Lunatic Asylum, and the State Penitentiary. The state has erected a new capitol, built of Arkansas marble. Other public buildings of note are the Pulaski county courthouse, the custom-house and postoffice, and the board of trade building.

Education.—Besides over 20 public schools, there are private and parochial schools. For higher education, the University of Arkansas, the main departments and buildings of which are located at Fayetteville, has branch schools of law and medicine located here. Besides these are the Arkansas Military Academy, a military training school for boys, Maddox Seminary for young ladies, and the Philander Smith College for colored youth.

History.—When the territory now known as Arkansas passed to the United States in 1803, the site of the future capital was an unbroken wilderness. By the act of Congress of 1819, Mar. 2, the seat of government of the newly created territory was fixed at the Post of Arkansas on the Arkansas river some 30 m. above its

confluence with the Mississippi. In 1820, Oct. 24, an act was passed removing the capital to Little Rock. It has been aptly said that so manifest was the destiny of the future city that it was made the seat of government before it had become a town. A postoffice was established 1820, Apr. 10. It was incorporated as a town 1825, Oct. 27. In 1835, Nov. 2, it was, by special act, incorporated as a city. In 1863, Sep. 10, Little Rock was captured by the northern army under Gen. Steele, and remained in possession of the Federal forces during the remainder of the war. The unexpected increase in the population between the years 1860 and 1870, covering the period of the civil war, may perhaps be attributed to the fact that during that period of disintegration society was forming new associations. The growth of the city since 1880 has been constant and rapid. Pop. (1900) 38,307; (1910) 45,941.

LITTLE ROCK, CAPTURE OF: The state authorities of Arkansas seized the United States arsenal at Little Rock 1861, Feb. 8, and until 1863, Sep. 10, the city remained in Confederate occupation. After the fall of Vicksburg and Port Hudson 1863, July 4 and 8, Gen. F. Steele was ordered from Vicksburg to Helena and directed to form a junction with Gen. Davidson, who was moving s. from Pilot Knob, Mo., break up Sterling Price's army, and occupy Little Rock. Steele arrived at Helena July 31, and organized his expedition, finding at that place two divisions of infantry, a brigade of cavalry and 39 guns; in all, about 7,000 men. On Aug. 5 he marched for Devall's Bluff on White river, reached it without incident, and there was joined by Davidson with 6,000 cavalry and three batteries, making his force about 13,000 men and 57 guns. A few days later he was joined by a brigade which raised his aggregate to over 14,000, of whom 10,500 were effective, many being sick. After several cavalry skirmishes Davidson on the 10th crossed to the s. side of the river by a pontoon bridge and marched on Little Rock, but ten m. distant, Steele marching along the n. bank. The city was defended by Sterling Price with about 7,700 men, of whom 6,500 were intrenched on the n. side of the Arkansas, and about 1,200 on the s. side, on the line of the Bayou Fourche, about five m. from the city. Davidson moved directly on the city, without much opposition until he reached Bayou Fourche, where he found Marmaduke's cavalry, dismounted, a brigade of infantry, and two batteries, all drawn up to oppose him. Davidson attacked on two roads, driving the Confederates back; Steele, who had marched abreast of him on the opposite side of the river, opened an enfilading artillery fire; and Marmaduke fell back through the city, closely followed by Davidson's cavalry. Price had withdrawn from the n. bank of the river when he learned that Davidson had turned the position, and evacuated the city at 5 p. m.,

retreating to Arkadelphia. Steele's cavalry followed Marmaduke's cavalry for a day, and returned to Little Rock on the 12th. At 7 p. m. the city was formally surrendered to Davidson by the civil authorities. Price burned eight steamers, one of them a powerful gunboat, but the arsenal was saved. Steele reported a loss of 137 killed, wounded, and missing; Price reported a total loss of 64.

LITTLE SISTERS OF THE POOR: Rom. Cath. religious and charitable order of women, founded by M. le Pailleur, curé of St. Servan, France, 1840, and established in the United States 1868. Their special work is the support, relief, and nursing of aged and infirm poor persons, and they seek money, clothing, and other articles from door to door. The American mother-house is in Brooklyn.

LITTLE TURTLE: an Indian chief of the Miami Nation, one of those who signed the Treaty of Greenville in 1795. He visited President Washington in Philadelphia in 1797. With his native forces he defeated General Harmer on the Miami river in 1790, and General St. Clair in 1791.

LITTLE WOMEN: a popular story for children by Louisa M. Alcott (q.v.), published in 1868.

LITTLETON, or LYTTLETON, *lĭt'l-ton*, Sir THOMAS DE, of Frankley, Worcestershire: celebrated English jurist: b. early in the 15th century, son of Thomas Westcote; d. 1481, Aug. 23. Littleton's surname was that of his mother. He studied—it is thought probable—at Cambridge, after which he removed to the Inner Temple. Henry VI. appointed him steward or judge of the court of the palace, and 1455, king's sergeant, in which capacity he travelled the northern circuit. In 1466, he was made one of the judges of the court of common pleas; and 1475, knight of the Bath. Littleton's fame rests on his work on *Tenures*, written in Norman-French, and published about the time of his death. It went through a multitude of editions. The first translation into English was made 1539, and in the next hundred years it went through no less than 24 editions. The changes in the laws relative to property have greatly diminished its value, and it is now little studied by lawyers; yet it is considered a model from the clear and logical manner in which the subject is handled.

LITTLETON: town in Grafton co., N. H., on the Ammonoosuc river, and on the Boston & Maine railroad. When it was first settled in 1770, it was called Apthrop. When it was incorporated, in 1784, the name was changed to Littleton. It is in a section of the state noted for its beautiful scenery and cool summer climate. The river furnishes considerable water-power; and the town has several manufactories. Its chief manufactures are shoes, gloves, wagons and carriages, whetstones, bobbins, stereo-

scopic views, woodenware, and furniture. It has a good public library; the building is a gift from Andrew Carnegie. The government of the town is administered by means of the annual town meeting. Pop. (1910) 4,069.

LITTORAL, a. *lĭt'ter-ăl* [F. *littoral*—from L. *litorālis*, belonging to the shore—from L. *litus*, the sea-shore: It. *litorāle*] of or relating to the shore, as of a sea or lake; in *geol.*, applied to operations and deposits which take place near the shore, in contradistinction to those in deep-water; in *bot.*, growing on the shore, as of a sea or lake, or on the banks of a river. LITTORAL CONCRETE, in *geol.*, a particular variety of rock formed by the cementation to sea-sand or shells. LITTORAL ZONE, that zone of marine life which lies between high and low water mark, varying in extent according to the rise and fall of the tide, and the shallowness of the shore.

LITTORALE, or LITORALE, *lĭt-to-râ'lā:* province of Austria, on n. coast of Adriatic Sea, including the islands comprising the counties of Görz and Gradisca, the margraviate of Istra, and dist. of Trieste. Formerly its name was applied to two strips of land, the eastern of which has figured in Hungarian history. It was formerly a part of the Croatian military territory; was made a civil dist. of Hungary by Maria Theresa, formed a part of the French province of Illyria under Napoleon, was recovered by Austria 1814, and attached to Hungary 1823, occupied by Croatia 1848, and attached to that province 1849, by Francis Joseph. The principal towns are Buccasi and Porto Re. Pop. more than 60,000.

LITTRÉ, *lē-trā'*, PAUL MAXIMILIEN ÉMILE: 1801, Feb. 1—1881, June 2; b. Paris: French journalist and distinguished philologist; compiler of an excellent dictionary. He began the study of medicine, but did not take the degree nor enter on practice, but gave himself to researches in philology, mastering the principal ancient and modern languages; also studying the history of medicine. While active in editing various journals and literary collections, he prepared an edition and translation of the Works of Hippocrates (*Œuvres d'Hippocrate*, 1839-61, 10 vols. 8vo.). Littré later became connected with the *National*, and was one of its principal editors till 1851. When Auguste Comte's new philosophical and social doctrine appeared under the name Positive Philosophy, Littré, attracted by its scientific form, took it up with great ardor, and 1845, wrote a lucid and clever summary of it (*De la Philosophie Positive*), and afterward defended it in pamphlets and in journal articles. He deemed the revolution of 1848 as the advent of his opinions to power; but soon undeceived, he retired from active politics 1848, Oct., resigning even his office of municipal councilor of the city of Paris. Returning to a life study, Littré continued his researches in medicine, at the same time working ardently at the history of

the French language. Already master of the old forms of the French language, he published in *Revue des Deux Mondes*—to which he contributed many papers at different times—an article called, The Homeric Poetry and the Ancient French Poetry (*La Poésie Homerique et l'Ancienne Poésie Française*, 1847, July 1), which attracted great attention. In it he attempted the translation of the first book of the *Iliad* in the style of the Trouvéres. The Acad. of Inscriptions chose him, in place of Fauriel (1844), one of the commission charged with continuing *L'Histoire Littéraire de France* (The Literary History of France), and he was one of the authors of vols. XXI, XXII, XXIII. In 1854, he was appointed editor of the *Journal des Savants*. Littré's great work is *Dictionnaire de la Langue Française*, containing, in addition to the usual information in French dictionaries, examples of the several meanings of the words, with exact reference to the classical works from which they are taken, besides the history of the usage of each word in documents anterior to the 17th century. Not only are all questions of grammar and lexicography (including etymology) fully discussed, but historical allusions are explained, and numerous details given regarding the arts and sciences, rendering the work a kind of cyclopedia. It was in preparation for many years; began to appear 1863; and was completed 1873. This splendid work, the real *thesaurus* of the French language, did not prevent the French Acad. 1863 from rejecting the author, whom M. Dupanloup denounced publicly as holding immoral and impious doctrines—referring to his ardent public advocacy of the Positivist theories. Littré published an excellent French translation of Strauss' *Life of Jesus* (1839-40, 2d ed. 1855); and a translation of Pliny's *Natural History*. In 1832 he published a paper on cholera. As editor or *collaborateur*, he was connected with the *Dictionnaire de Médicine*, the *Gazette Medicale de Paris*, and the surgical journal *L'Expérience*. Other works from his pen are *Histoire de la Langue Française* (1862, 2 vols. 8vo.), *Paroles de Philosophie Positive* (1859), *Auguste Comte et la Philosophie Positive* (1863), and *Auguste Comte et Stuart Mill* (1866). He published 1857 *Œuvres Complètes d' Armand Carrel*. In 1870, he contributed to the *Revue Positiviste* an article *Des Origines organiques de la Morale*, which attracted great notice, and furnished with new argument the Rom. Cath. theologians, who accused him of atheism. Three months before, Littré had opposed the publication of Comte's later works as being unworthy of him. Just before the siege of Paris, Littré's friends compelled him to quit the capital. In 1871, Jan., Gambetta appointed Littré prof. of history and geography at the Ecole Polytechnique. Next month he was chosen representative of the Seine department in the national assembly, where he sat with the party on the left. At its sitting 1871, Dec.

30, the French Acad. at last admitted him to membership, to fill the place of Villemain: on this occasion, Dupanloup, bishop of Orleans, thought fit to resign his connection with the Academy. *Médecine et Médecins* was published by Littré 1872. In 1875 he received honors from Leyden and from the Austrian Academy.

LIT'TROW, JOSEPH JOHANN VON: Austrian astronomer: b. Bischof-Teinitz, Bohemia, 1781, Mar. 13; d. Vienna 1840, Nov. 30. In 1807 he obtained the chair of astronomy in the University of Cracow, and in 1810 accepted a similar chair in Kasan, where he founded the observatory. He became in 1816 joint director of the observatory of Buda, and from this he removed in 1819 to become director of the observatory of Vienna. He completely reorganized this establishment, and in his lectures yearly attracted a numerous audience, not only of ordinary students, but of unprofessional persons, many of them strangers from abroad. His writings, chiefly on mathematical and astronomical subjects, are numerous, and have generally had a very extensive circulation. By far the most popular of all is his *Die Wunder des Himmels,* of which the 8th edition was published (1895-7). It ranks as one of the best works of astronomy for the use of general readers.

LITTROW, KARL VON: Austrian astronomer: b. Kasan, Russia, 1811, July 18; d. Venice 1877, Nov. 16. He was a son of Johann Littrow (q.v.), whom he assisted in the Vienna Observatory from 1831, and succeeding him as director in 1842. He edited the works of his father, adding considerably to *Die Wunder des Himmels,* and was the author of *Populäre Geometrie* (1839); *Verzeichnis der geographischen Ortsbestimmungen* (1844-6).

LITUITES, n. plu. *lĭt'ū-īts* [L. *litŭus,* a trumpet]: in *geol.,* a genus of chambered shells whose whorls are partially coiled up at the smaller end, and the last chamber is produced into a straight trumpet-like tube. LITUOLITES, n. plu. *lĭt'ū-ō-līts,* a genus of minute foraminifera having a spiral form, and straight prolonged outer whorl.

LITURGY, n. *lĭt'ėr-jĭ* [F. *liturgie*—from mid. L. *litur'gĭă*—from Gr. *leitour'gĭă,* a public service—from *leitos,* public; *ergon,* work, service]: printed formulary according to which the religious services of a church are performed. LITURGIC, a. *lĭ-tėr'jĭk,* or LITUR'GICAL, a. *-jĭ-kăl,* pertaining to a formulary of public devotions. LITURGIOLOGY, n. *lĭt-ėr'jĭ-ŏl'ŏ-jĭ* [Gr. *logos,* discourse]: treatise on liturgies of all ages.—*Liturgy,* in general, signifies a form of prayer and ceremonial established by ecclesiastical authority, to be used in the public services of the church, but is especially applied to that used in the celebration and administration of the Eucharist. The historical records of Christianity show that some

such forms were in use in the early centuries, but it is highly probable that for a considerable period they were not reduced to writing; hence even those of the extant liturgies which represent the earliest forms differ considerably from each other, if not in the substance of the rite, at least in the arrangement even of those parts which are common to them all. There is no mention of any liturgy in the New Testament, nor any record of the establishment of any detailed form of service in the time of the apostles. The Lord's Prayer, the Baptismal formula, and various hymns used in worship, do not constitute a liturgy in the sense in which that term is universally applied. It is impossible to fix the date of the first establishment of a liturgy consisting of required and extended verbal forms proceeding in a certain order. Pliny the Younger, in his letter to Trajan, speaks of the Christians singing hymns to Christ and taking an oath (or as some render it, sacrament) binding themselves to a pure life. Justin Martyr, about 150, describes the *order* used at the observance of the Lord's Supper, probably in the church at Alexandria, but gives no verbal forms. It is evident that liturgies grew up here and there through constant familiar using and amplification of certain phrases of worship, some of which may have been commended by traditions of an apostolic usage; and that they began, as they in large part remained, around the eucharistic observance, as their solemn centre. Special need for them was doubtless found in the general popular ignorance of those times, and in the scattered state of the Christian disciples in the early centuries. And a sufficient authorization for the use—not now to speak of an authoritative imposition—of forms of prayer, was found in Christ's setting forth of such a form, with the command, 'When ye pray, say ——'; together with the fact that for 'common prayer' in which an assembly may join their voices, some form of words known to all is requisite. Indeed, all hymns that are addressed to God are written forms of prayer or praise, and must be so intended for use by a congregation in song. A theological discussion of ancient liturgies is important in a doctrinal view, and interesting for the study of Christian antiquities. The liturgies form the great stronghold of the Rom. Cath. controversialists on the real presence and the eucharistic sacrifice. We confine ourselves to a brief historical account of the various liturgies extant, and of their connection with the various ancient Christian communities. Liturgies may best be distributed into two classes, those of the East, and those of the West.

1. *Oriental Liturgies.*—These are six in number, four derived from the great churches in which they were used; the fifth from the Armenian Church, which early formed a distinct liturgy; the sixth from the great Syrian sect of Nestorius, which modified the liturgy to its own

peculiar tenets. These liturgies are severally known as the liturgy of Jerusalem, of Antioch, of Alexandria, and of Constantinople, the Armenian liturgy, and the Nestorian. The diversities of these liturgies, though very great in appearance, yet can hardly be said to be substantial. Certain leading parts are common to them all without substantial variation; but they are arranged in different order, and, except in the form of the eucharistic consecration, the hymn Trisagion, and a few other details, the form of words is often entirely dissimilar. The liturgy of Jerusalem, though ascribed to the apostle James, is of uncertain origin and date; nor is it ascertained whether its original language was Syriac or Greek. The latter is the language in which it is now found, and the present liturgy closely corresponds in the main with that which formed the text of St. Cyril of Jerusalem in his well-known Mystagogical Lectures. The liturgy of Antioch exists in Syriac, but it is evidently only a free translation of the liturgy of Jerusalem. The ancient liturgy of Alexandria is ascribed to the evangelist Mark; but the existing liturgy has received numberless additions at later dates, and has been modified by both the great sects of this patriarchate to suit their peculiar doctrines. Several other liturgies are in use among the Copts, under the name of St. Basil, St. Gregory, and St. Cyril; and the Abyssinian Christians have no fewer than ten, which are distinct, at least in name. The church of Constantinople has two different liturgies, both of great antiquity, that of St. Basil, and that of St. Chrysostom. These, however, are not indiscriminately used, each being employed on special occasions or on certain defined festivals. The liturgy of Constantinople is the original of the Slavonic liturgy used in the Russian and Russo-Greek Church and its various branches. The Armenian liturgy dates from the introduction of Christianity into Armenia under Gregory the Illuminator. It is in most respects derived from that of St. Chrysostom. The Nestorians have three liturgies —the liturgy of the Apostles, of Theodore of Mopsuestia, and of Nestorius. These, however, are all combined into one, each being assigned to a particular season, or used on special occasions. The language of all is Syriac.

2. *Western Liturgies.*—The liturgies of the West present much less variety, and indeed all are derived either from the eastern liturgies or from a common source. What are known as the Catholic liturgies may be reduced to four—the Roman, the Milanese or Ambrosian, the Gothic or Mozarabic, and the Gallic. The oldest forms of the Roman liturgy are found in three so-called sacramentaries—that of Leo, that of Gelasius, and that of Gregory the Great. It is the last that has left its impress most clearly on the modern Roman missal, which was brought to its present shape by a commission or-

dered by the Council of Trent, after a careful revision and collation of all the liturgical forms in use in the West in the 16th c. The first revision took place under Pius V., and two subsequent revisions were made by Urban VIII. and Clement VIII. The Ambrosian liturgy is used only in the diocese of Milan, and is popularly traced to St. Ambrose. It bears a close analogy to the Roman liturgy, but it has many peculiarities, some of which are highly interesting, as illustrating the history of the details of Christian worship. Its ceremonial, observed with great solemnity in the cathedral of Milan, is in some parts highly striking and characteristic. The Gothic or Mozarabic is of still more limited use, being now confined to a single chapel at Toledo, founded and endowed for the purpose by the celebrated Cardinal Ximenes. It is the old liturgy of the Gothic Church of Spain; and after the infusion of the Arabic element, which followed the Moorish invasion, it was called by the name of Mozarabic, a word of disputed etymology. This liturgy is certainly of Oriental origin; but its history, and the time and circumstances of its introduction into Spain, have furnished matter of much speculation. Some parts of the rite are exceedingly curious, especially those which accompany the breaking of the host. The Gallican liturgy has no precise modern representative, and is known only from ancient forms, more or less complete, which have been edited by Mabillon, and recently by Mone. The older Gallican forms bespeak an Oriental origin, and are probably derived from the Greek Christian colony which settled at Marseille, Lyon, and the other churches of the south. The later forms approximate more to the Roman. Neither of these, however, is to be confounded with the more modern missals in use in several French dioceses, which do not differ from the Roman except in minor details, and most of which have now been displaced by the Roman missal. Of Protestant communities, the Anglican Church alone professes to follow the ancient liturgical forms (see COMMON PRAYER, BOOK OF). Of late there is evident tendency among churches known as non-liturgical to introduce some liturgical forms, and many books of worship have been prepared in this view; but there seems no tendency in such churches to establish as imperative any such forms: these are merely interspersed with extemporaneous worship as occasion may require. See Renaudot's *Orientalium Liturgiarum Collectio*, 1740, 2 vols; Assemanni's *Bibliotheca Orientalis;* Palmer's *Antiquities of the English Liturgy;* Binterim's *Denkwürdigkeiten der Chris-Katholischen Kirche;* Tertullian, *De Corona;* Cyprian, *Epistle;* Report of Council in Trullo; Probst, *Liturgie der drei ersten Jahrhunderte*, who claims that there was a written liturgy before 150; Hammond, *Ancient Liturgies;* Smith and Cheetum, *Liturgies;* Rock, *The Church of Our Fathers, as Seen in Saint Osmond's Rite for the*

Cathedral of Salisbury (1904); De Herdt, *Sacra Liturgia* (3 vols.).

LIT'URGY, JEWISH: in the narrower sense of a ritual of fixed prayers, chiefly for public worship. The Mosaic records contain an ordinance respecting the 'confession of sins' (Lev. v. 5; xvi. 21), without, however, prescribing a distinct form for the purpose. Three formulas only are fixed—the benediction of the priests (Num. vi. 24-26), the prayer of thanksgiving on the occasion of the first offering (Deut. xxvi. 5-10), and that which was to accompany the offering up of the third year's tithe, beginning: 'I have brought away the hallowed things out of my house' (Deut. xxvi. 13-15). Although prayers are often mentioned before the Exile, yet they do not seem, except in the cases mentioned, to have been introduced as yet as a regular element into the service of the Temple. The songs of the Levites (I Chr. xvi. 4; xxiii. 3), and occasional prayers, such as are found in the Psalms, or like that of Solomon at the inauguration of the Temple, are all that are recorded. Private devotions were common (cf. I Kings, viii. 30, etc.; Is. i. 15), but every one prayed when his heart prompted him in the words inspired by his joy or sorrow. Not before the time of Daniel is a fixed institution of three daily prayers mentioned (Dan. vi. 11). The task of compiling a liturgy proper, and of fixing the times and seasons of prayer, was probably undertaken first by the men of the Great Synagogue. Two chief groups around which, as time passed, an enormous mass of liturgical poetry has clustered, are distinctly discernible—one, the *Shemah*, ('Hear, Israel, etc.'), being a collection of the three biblical pieces (Deut. vi. 4-9; xi. 13-21; Num. xv. 37-41) expressive of the unity of God and the memory of His government over Israel, strung together without any extraneous addition; the other, the *Tefillah*, or Prayer, by way of eminence (adopted into Islam as *Salavat*, Sur. ii. 40; cf. v. 15), consisting of a certain number of supplications with a hymnal introduction and conclusion, and followed by the priestly blessing. The separate portions of this prayer gradually increased to 18, and the prayer itself received the name *Shemonah Esre* (Eighteen). The first additions to the *Shemah* formed the introductory thanksgiving for the renewed day, in accordance with the ordinance that every supplication must be preceded by a prayer of thanks, called *Jozer* (Creator of Light, etc.), to which were joined *the three Holies* (*Ofan*), and the supplication for spiritual enlightening in the divine law (*Ahaba*). Between the Shemah and the Tefillah was inserted the *Geulah* (Liberation), or praise for the miraculous deliverance out of Egypt and the constant watchings of Providence. A *Kaddish* (Sanctification), and certain psalms, seem to have concluded the service of that period. This was the order of the *Shaharith*, or morning prayer; and very similar to this was the *Maarib*,

or evening prayer; in the *Minha,* or afternoon prayer, the Shemah was omitted. On new moons, Sabbath, and feast days, the general order was the same as on week days; but since the festive joy was to overrule all individual sorrow and supplication, the intermediate portion of the Tefillah was changed according to the special significance and the memories of the day of the solemnity, and additional prayers were introduced for these extraordinary occasions, corresponding to the additional sacrifice in the temple, and varying according to the special solemnity of the day (*Mussaf, Neïlah,* etc.). The first compilation of a liturgy is recorded of Amram Gaon A.D. 870-880; the first that has survived is that of Saadja Gaon (d. 942). These early collections of prayers generally contained also compositions from the hand of the compiler, and minor additions, such as ethical tracts, almanacs, etc., and were called *Siddurim* (Orders, Rituals), embracing the whole calendar year, week-days and new moons, fasts and festivals. Later, the term was restricted to the week-day ritual, that for the festivals being called *Machsor* (Cycle). Besides these, were the *Selichoth,* or Penitential Prayers; *Kinoth,* or Elegies; *Hoshanahs,* or Hosannahs (for the seventh day of the Feast of Tabernacles); and *Bakashoth,* or Special Supplications, chiefly for private devotion.

The public prayers were for a long time said only by the public reader (*Chasan, Sheliach Zibbur*), the people joining in silent responses and amens. These readers by degrees—chiefly from the 10th century—introduced occasional prayers (*Piutim*) of their own, beside those used of yore. The materials were from Halacha (q.v.) as well as from Haggada (q.v.): religious doctrine, history, saga, angelology, and mysticism, interspersed with biblical verses, are thus put together like a mosaic most original and fantastic, often grand and brilliant, and often obscure and feeble; and the pure Hebrew in many cases made room for a corrupt Chaldee. The two chief groups of religious poetry were, the Arabic and the French-German school. The most eminent representative of the Pajtanic age (ending about 1100) is Eleazar Biribi Kalir. Among the most celebrated poets in his manner are Meshulam b. Kalonymos of Lucca, Solomon b. Jehuda of Babylon, R. Gerson, Elia b. Menahem of Mans, Benjamin b. Serach, Jacob Zom Elem, Eliezer b. Samuel, Kalonymos b. Moses, Solomon Isaaki. Of exclusively Spanish poets of this period the most brilliant are—Jehuda Halevi, Solomon ben Gabirol, Josef ibn Abitur, Isaac ibn Giat, Abraham ibn Esra, Mose b. Nachman, etc. When, however, in the beginning of the 13th century, secret doctrine and philosophy, casuistry and dialectics, became the paramount study, the cultivation of the Piut became neglected; and few, and generally insignificant, are the writers of liturgical pieces since.

According to the different countries, the order and even the contents of the cyclo differed, since not all liturgical pieces had been incorporated uniformly. We have thus—to name a few out of many—the rituals of Germany (Poland), of France, Spain, and Portugal (Sefardim), Italy (Rome), the Levant (Romagna), and even of some special towns, like Avignon, Carpentras, Montpellier. The rituals of Barbary (Algiers, Tripoli, Oran, Morocco, etc.), are of Spanish origin. The Judæo-Chinese liturgy consists only of pieces from the Scriptures. The Jewish liturgy has, in its various forms, very frequently been commented upon, and has been translated into nearly every modern language.

The 19th century has witnessed, chiefly in western Europe and the United States, a successful movement for the shortening and revision of the traditional liturgy, the introduction of the vernacular, and other changes due to the new environment. The best work on liturgy for English readers is Dembitz' *Jewish Services in Synagogue and Home* (Phila., 1898).

LIU-KIU', or LIU-TCHIU'. See LOO-CHOO.

LIUTPRAND, *lôt'prând,* or LIUDPRAND, *lôd'prând,* or LUITPRAND, *lô'ĭt-prând:* chronicler: about 952-972; b. Lombardy. He was educated at the court of King Hugo, and entered into the service of his successor, Berengarius; but falling into disgrace at court about 955, resided for some years at Frankfurt-on-the-Maine, followed Emperor Otto I. to Italy 961, and was made Bp. of Cremona, and afterward sent on an embassy to Constantinople. His *Antapodosis* treats of the period 886 to 948. He wrote also *De Rebus Gestis Ottonis Magni Imperatoris,* and *De Legatione Constantinopolitanâ.* The best edition of his works is in *Monumenta Germaniæ* (1839, separately published 1877). See Köpke, *De Vita Liutprandi* (1842).

LIVE, v. *lĭv* [from LIFE, which see: Ger. *leben;* Dut. *leven;* Goth. *liban,* to live: Icel. *lifa,* to be left, to remain behind]: to exist or have being; to feed or subsist; to continue in; to dwell; to have a settled residence in any place; to reside with; to continue or endure; to flourish; to remain undestroyed; in *Scrip.,* to be exempt from spiritual death; to attain or approach to immortality. LIV'ING, imp.: ADJ. not dead; existing; continuing; running; flowing; producing animation and vigor; quickening: N. means of subsistence; maintenance; power of continuing life; manner of life; benefice of a clergyman. LIVED, pp. *lĭvd.* LIV'INGLY, ad. *-lĭ,* in a manner to express actual life; in the living state. THE LIVING, those who are alive as distinguished from *the dead.* A LIVING, means or income for subsistence; church preferment. LIV'ER, n. one who lives. LIVE, a. *līv,* having life; not dead; active. LIVE-STOCK, *līv-,* animals for rearing or exportation. LIVELONG, a. *lĭv'-*

lōng, that lives or endures long; tedious; lasting. LIVELY, a. *līv'lĭ,* vigorous; active; sprightly; animated; energetic: ADJ. briskly; vigorously. LIVE'LINESS, n. *-nĕs,* sprightliness; animation; activity. TO LIVE DOWN, to live in such a manner as to cause people to forget, or not remember unpleasantly, some slur on the character or reputation. TO LIVE WITH, to dwell with; to cohabit. *Note.*—The older sense of LIVE is 'to remain; to be left behind.'—SYN. of 'live, v.': to exist; be; subsist; feed; continue in; abide; reside; remain; last;—of 'liveliness': gayety; vivacity; smartness; briskness; effervescence;—of 'lively': cheerful; merry; gay; mirthful; jovial; vivacious; sportive; brisk; quick; nimble; smart; alert; active; spirited; strong; prompt; vivid; jocund; airy; blithe; gleeful.

LIVE, a. *līv* [an abbreviation of ALIVE]: having life; not dead; active; burning.

LIVEING, GEORGE DOWNING, M.A., SC.D., F.R.S., J.P.: English chemist and surgeon: b. Nayland, Suffolk, 1827, Dec. 21. He was graduated at St. John's College, Cambridge, in 1850, and in 1853 he became a fellow and lecturer in natural science in that college. He was appointed professor of chemistry at the Royal Military College, Sandhurst, in 1860; and in 1861 professor of chemistry in the University of Cambridge. In 1852 he established at his own expense the first chemical laboratory for undergraduates in Cambridge, and may be said to be the founder of the system of experimental teaching that is now such a prominent feature of that university. He was instrumental in securing the examination and inspection by the university of secondary schools, and the admission of girls' schools to the examinations. He also took an active part in the establishment in 1873 of the Oxford and Cambridge Schools Examination Board, and in 1875 of the medical examinations for the Diploma of Public Health. He promoted the establishment of the School of Agricultural Science at Cambridge. He has published: *On the Transmutation of Matter* (Cambridge Essays, 1st series, 1855); *Ultra-Violet Spectra of the Elements* (with Prof. Dewar, *Transactions* of the Royal Society, 1883); *Chemical Equilibrium the Result of the Dissipation of Energy* (1885); *Report on the University Colleges* (with Mr. Warren, 1897); and many papers on spectroscopy, crystallization, etc., in the *Proceedings* of the Royal Society, the *Proceedings* of the Cambridge Philosophical Society, and the *Philosophical Magazine.*

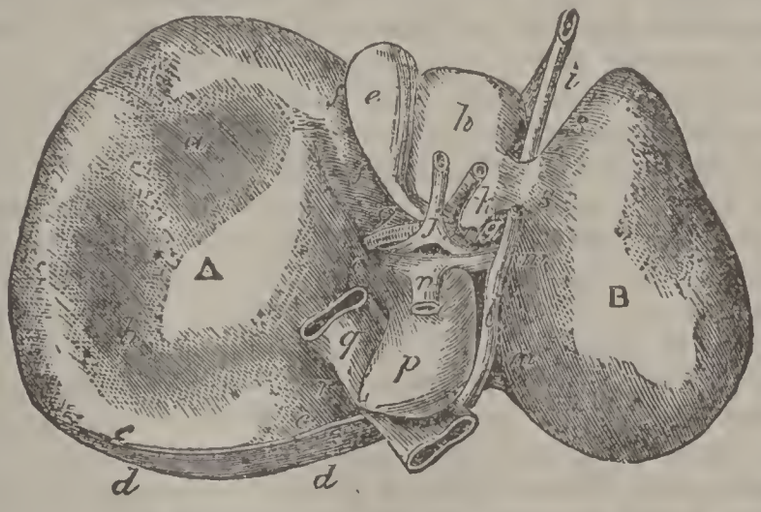
LIVELIHOOD, n. *līv'lĭ-hûd* [properly OE. *lifelode* or *livelode,* way of life, means of living—from Icel. *leid;* AS, *lad,* way]: means of living or support; maintenance.—SYN.: living; subsistence; support; sustenance.

LIVELODE, n. *līv'lōd* [AS. *liflád,* manner of living: see LIVELIHOOD]: in *OE.* maintenance; support; livelihood.

LIVER, n. *liv'ėr* [AS. *lifere;* Dut. *lever;* Icel. *lifr;* Ger. *leber,* liver: Russ. *liver',* the pluck or liver]: the organ of the body of a deep-red color lying under the ribs, which secretes bile (see below). LIVER-COLORED, dark or brownish red. LIVER OF SULPHUR, a fused mixture of several sulphides of potassium, so named from its liver color. LIVER ORE, a dark liver-colored variety of sulphuret of mercury. LIVER PYRITES, a familiar term for a liver-colored concretionary variety of sulphuret of iron. LIVERWORT, *-wėrt,* the popular name of the subord. *Marchantiĕæ,* ord. *Hepatĭcæ.*

LIV'ER, THE: the largest gland in the body; weighing three to four lbs., and measuring about 12 inches from side to side, and six or seven inches from its anterior to its posterior border. It is mainly in the right hypochondriac region, but reaches over so that a small portion lies in the left hypochondrium; it is thick and indented behind, where it crosses the convex bodies of the vertebræ; convex on its upper surface, where it lies in the concavity of the diaphragm; and concave below, where it rests against the stomach, colon, and right kidney. This lower surface presents a fissure dividing the organ into a right and a left lobe.

The liver is retained in its position by five ligaments. Besides the right and left lobe, there are three smaller



Under Surface of the Liver:

A, right lobe; B, left lobe; *a,* depression for colon; *b,* depression for right kidney and capsule; *cc,* coronary ligament, inferior layer; *dd,* surface uncovered by peritoneum; *e,* gall-bladder; *ff,* fissure for gall-bladder; *gg,* transverse fissure; *h,* lobulus quadratus; *i,* umbilical vein; *j,* hepatic duct; *k,* hepatic artery; *l,* ductus venosus; *mm,* fissure for ductus venosus; *n,* vena portæ: *o,* lobulus caudatus; *p,* lobulus Spigelii; *q,* inferior vena cava; *r,* fissure for inferior vena cava; *ss,* longitudinal fissure.

lobes. The bulk of the organ is made up of the right lobe, which is six times as large as the left.

The vessels of the liver are the hepatic artery, which comes off from the Cœliac Axis and supplies the organ with nutrient blood; the Portal Vein, which con-

veys to the liver the venous blood of the intestines, spleen, and stomach.

The liver, both on its surface and internally, is of a dark reddish tint, so well known that the term *liver-colored* is universally recognized. The substance of the organ is composed of lobules held together by extremely fine areolar tissue, and ramifications of the minute branches of the various hepatic vessels. Each lobule is composed of a mass of hepatic cells, of a plexus of biliary ducts, of a plexus of capillaries from the portal vein, of a branch of the hepatic vein, and of minute arteries. The exact mode in which the bile formed in the cells makes its way into the origin of the ducts is not known. The numberless minute ducts gradually run into one another until, as they emerge from the lower surface of the liver they are reduced to two large trunks, which soon unite to form the hepatic duct. Into the hepatic duct, the cystic duct from the neck of the gall-bladder enters, and the two combine to form the common duct (*Ductus communis choledochus*), which opens into the duodenum. This common excretory duct of the liver and gall-bladder is about three inches in length, and of the diameter of a goose-quill.

Recent investigations of the chemical composition of the liver show that the organ in health contains 68.6 per cent. of water, and 31.4 per cent. of solid constituents—of which 3.8 are fat, 4.7 albumen, while the rest is made up of vessels, salts, and extractive matters. (In the diseased condition known as fatty degeneration of the liver—artificially induced in the geese which contribute to the formation of Strasburg Pie, or *pâté de fois gras*—the fat is enormously increased; in one remarkable case analyzed by Dr. Beale, it amounted to 65.2 per cent. of the whole weight of the organ). Sugar, varying in amount from 1 to 2 per cent., is found; and inosite, uric acid, sarcin, xanthin, and leucin usually occur in traces.

The gall-bladder may be regarded as a *diverticulum* or offshoot from the hepatic duct. It has somewhat the shape of a pear, and lies in a depression on the under surface of the liver. Its use is not definitely known, for it is too small to serve as a reservoir for bile, which was formerly believed to be its function. That the gall-bladder is not an essential appendix to the liver is shown by the fact that it is absent in many genera of mammals. Thus, it is present in the ox, sheep, and goat, but absent in the horse and many other herbivora.

It was formerly believed that the liver served merely for separation of the biliary secretion from the blood; but there is now abundant evidence that the blood itself is changed by its means, in such a way as to show that this gland possesses an *assimilating* as well as a *depurating* action. Thus, the albuminous matter contained during digestion in the blood of the veins which passes from the intestines to the portal vein (the mesenteric veins), is

very different from the albuminous matter contained in the hepatic veins; the blood, before reaching the liver, containing a crude albuminous product, while the hepatic veins contain only true blood-albumen. That the liver possesses an assimilating power on albuminous substances is shown also by the experiments of Claude Bernard, who found that if a solution of egg-albumen be injected into any part of the systemic circulation, albumen speedily appears (like other soluble substances which are foreign to the body), in the urine, and is eliminated as an extraneous matter; but if it be injected into the portal vein, it does not appear in the urine, but becomes a normal constituent of the blood (blood-albumen), through the agency of the liver. It is now also known that the liver secretes a substance closely allied to, and readily convertible into, sugar—viz., Glycogen—which must be regarded as a respiratory or heat-forming food. Further, it appears that fatty matters are elaborated in the liver—the blood of the hepatic veins which leave the liver containing considerable more fat than that of the portal vein which enters it. Lastly, during the last three days of incubation of the chick, the liver is made bright yellow by the absorption of the yelk, which enters the branches of the portal vein, and is then converted partly into *blood-corpuscles*, which enter the circulation, and partly into bile, which is discharged into the intestine. Hence, there is distinct evidence, from several points of view, that the liver is an *assimilating* organ. The *depurating* action of this organ is exhibited in the secretion of bile, by which some of the effete matters of the blood, as well as accidental poisons it may contain, are removed. For the use of the bile in the digestive process, see DIGESTION.

This important gland shows itself first in the form of yellowish-brown cells in the polyps, and gradually becomes more concentrated and developed in the echinoderms, annelides, nudobranchiate gasteropods, insects, crustaceans, air-breathing mollusks, cephalopods, fishes, reptiles, birds, and mammals. Till we arrive at the vertebrated classes, it consists of tubes or follicles containing cells, which stand to them in the relation of an epithelium, and its structure is easily made out; but when, as in the vertebrata, it is composed mainly of a solid parenchyma, made up of lobules, each of which is composed of aggregations of cells surrounded by the alternate ramifications of the ducts and other vessels, it presents an anatomical complexity.

LIVER, DISEASES OF THE. *Acute Catarrhal Jaundice* (synonyms: Catarrhal icterus, inflammation of the common bile duct, duodenocholangitis) is the most common form of jaundice. It is produced by some unknown infectious cause and favored by a previous disturbance of the stomach, which may extend along the mucous membrane of the duodenal part of the intestine, into which

the common bile duct opens. The symptoms are loss of appetite, foul taste in the mouth, feeling of pressure in the region of the stomach, eructations, constipation and general malaise. A few days after the onset of these signs the skin becomes yellow, the eyeballs changing. This important symptom is the expression of the occlusion of the bile duct by swelling as well as mucus, so that the bile is retained. Part of the bile is pressed into the ducts of the liver, where it causes more or less irritation, but most of it is absorbed by the lymphatic vessels, which transfer it to all regions of the body by the route of the blood-vessels. The deposition of bile in the layers of the skin is responsible for a most distressing sensation of itching. The excretion of the bile in the urine is indicated by its color, which is either reddish-brown like beer, or yellowish-green. The stools are gray or clay-colored on account of the absence of bile in the intestine, wherefore the fats are not dissolved. In treatment, strong medication is unnecessary, rest and fluid diet (soups) being the main healing factors. Fat must be avoided. Milk, however, is well borne, as a rule, although it contains some fat. The Carlsbad Sprudel-water and small doses of rhubarb are recommended. Large enemas of cold water also have a favorable effect.

There is a typical form of infectious jaundice (also called Weil's disease) which is observed frequently in men between the 20th and 40th year, and predominantly during the summer months. The symptoms are virtually the same as in the simple acute form of catarrhal jaundice, except that they are more intense and that some albumen is always found in the urine, which indicates participation of the kidneys in the inflammatory process. The treatment is the same.

Hepatitis, or inflammation of the liver, is always of a suppurative nature, wherefore it is also called suppurative hepatitis. It is due to the invasion of pus-producing bacteria, which are carried into the liver either by the blood-circulation (through the hepatic artery) or the bile ducts. It is mostly in severe forms of dysentery and other ulcerative processes of the intestine that the liver tissue becomes infected. Gallstones (see below) also produce suppurative inflammation of the liver. The temperature is of the intermittent pyemic type, and oscillates between 103° and 105° Fahrenheit. Chills and profuse perspiration are frequent. Locally there is increase in size, resistance in the region of the liver, and, as a rule, violent pain. In pushing the diaphragm upward the abscess may cause disturbance of respiration. At a later stage the abscess may also compress the bile ducts, thus producing stagnation and absorption of the bile, as an evidence of which process jaundice develops. The general condition of the exhausted patient indicates a severe affection. If the disease is dependent upon a gen-

eral pyemia (blood-poisoning) the final outcome is usually fatal. If due to an idiopathic process or to foreign bodies, like gallstones, a speedy opening and evacuation of the abscess by the surgeon generally effects a cure.

Hepatitis Interstitialis (synonyms: Cirrhosis of the liver, chronic diffuse interstitial hepatitis, granular liver, sclerosis of the liver, gin-drinker's liver, hob-nail liver) is due to a primary affection of the liver cells, followed by their destruction and subsequent proliferation and final shrinking of the connective tissue framework. By this shrinking, the size of the liver gradually diminishes and the surface becomes nodular. Thus the liver is sometimes reduced to half its size. The liver tissue becomes very much hardened. If the organ is dissected in this stage, the knife produces a grating sound. The color of the dissected portion is light yellowish. Microscopical examination shows only the ruins of the liver-parenchyma, surrounded by abundant connective tissue. In the beginning the symptoms are often insignificant. In alcoholics it is doubtful whether the supposed early symptoms (loss of appetite, nausea, eructations, constipation, and epigastric pain) are not due to a prodromal catarrh of the stomach or intestine. When the gradual destruction of the liver has led to disturbances in the circulation of the portal vein, stagnation is caused in the veins of the peritoneum, as a result of which ascites (dropsy) develops. In this stage the spleen also becomes enlarged. Jaundice is frequent. The obstruction of the portal circulation is responsible for hemorrhages from the stomach, intestine, and esophagus, also at times from the kidneys, bladder, nose, and uterus. The abdomen may swell enormously. The damming back of the blood may produce areas of much dilated veins around the umbilical region; this is called the Caput Medusæ. As a rule, the treatment is only symptomatic, since the shrinking process cannot be arrested. The most important factor in the treatment is regulation of the diet. Alcohol must not be permitted under any circumstances. The same applies to irritants like pepper, mustard, radishes, onions, etc. Meat is to be given sparingly, while milk, buttermilk, eggs, vegetables, and farinaceous food are to be advised. The administration of iodide of potassium is suggested by some good authorities, but its effect is most uncertain, the good results reported every once in a while being explained by the fact that the patients suffered from syphilis of the liver, the symptoms of which often resemble those of cirrhosis. Carlsbad salt should be taken daily. If the patient is able to afford it, he may go to Carlsbad, Marienbad, or Neuenahr. As soon as the dropsy is marked the abdominal cavity is to be tapped. The operation of Talma, which consists in the artificial establishment of a collateral circulation between the portal and the systemic veins, is recommendable, as it has postponed the recur-

rence of the dropsy for several years in those cases which were operated upon early.

Acute Yellow Atrophy (synonyms: icterus gravis, malignant jaundice, acute parenchymatous hepatitis) is either of a primary or secondary nature. Primarily it develops in apparently healthy persons between the age of 15 to 35, and especially so in pregnant women. The secondary type is observed after severe infectious diseases, like typhoid fever, septic and puerperal diseases, and as a result of acute phosphorus-poisoning. At the initial stage the symptoms resemble those of the acute yellow atrophy due to acute catarrhal jaundice. Microscopical examination shows extensive fatty degeneration of the liver cells. With very few exceptions this process terminates fatally, as a rule not later than a few weeks after the onset. There is practically no treatment of so hopeless a condition. The nervous symptoms may be alleviated by warm baths and narcotics.

Icterus Neonatorum (synonyms: Jaundice of new-born infants). On the second and third day after birth the normal red color of the skin of the infant may change into a yellow tint, especially marked on the face and trunk, while the extremities may be entirely free. The prognosis is absolutely good. The process is due to a slight stagnation in the bile ducts. The symptoms are virtually identical with those of the acute catarrhal jaundice, described above, except that they are less severe. No treatment is required.

Echinococcus of the Liver (synonym: hydatid disease of the liver). The echinococcus, or rather the *Tænia Echinococcus,* is a small tapeworm about four millimetres in length, whose natural habitat is in the intestine of the dog. Its head is characterized by a rostellum with a double row of hooklets, behind which there are four sucking disks. The last segment of the tænia is the largest and shelters at least 500 eggs. The shell of the egg, when swallowed by man, in his food or water, becomes dissolved, whereby the larva is liberated. The latter by perforating the intestinal wall gains access to the circulation, which carries it into the liver. There the embryo establishes itself and forms a cyst which contains clear fluid, free from albumin. After a few months of continuous growth, the cyst reaches the size of a walnut, and buds develop, which by degrees assume the form and size of the primary cyst. As long as the cysts are small no disturbance is caused. Later a feeling of pressure and pain in the region of the liver is observed and the protrusion of a globular and elastic tumor is noticed. The treatment is exclusively surgical and consists in the exposure and removal of the cysts, the prognosis being favorable.

Cholelithiasis (synonyms: hepatic calculus, biliary calculus, gallstone disease, gallstone colic). The formation of gallstones is due to the invasion of micro-organisms

into the gall-bladder from the intestine. Under what circumstances this invasion takes place can at the present only be guessed. Stagnation, thickening and consequently concentration of the bile are surely predisposing moments for abnormal processes of decomposition, which offer a favorable soil for bacterial development. Every eighth person suffers from cholelithiasis on an average. Most cases occur in those over 40. In women it is by far more frequent than in men, the proportion being three to two. Compression by corset, the more sedentary habit, and pregnancy undoubtedly favor the preponderance in the fair sex. Gallstones are generally found in the gall-bladder, but also in the hepatic ducts. They are either single or multiple. Their size varies from that of the head of a pin to that of a hen's egg. Large stones are generally solitary, while small stones might be found in thousands. The shape is globular, or oval, or polyhedral, their color brownish-black, brown, or greenish-yellow, according to their percentage of pigment. The stones are chiefly composed of cholesterin, but there is also added a smaller or larger amount of calcium carbonate. In most cases there are no symptoms at all, in some cases there are slight dyspeptic disturbances and in others there are the most formidable signs. The most characteristic signs are those evidenced by colicky attacks, which are observed without any prodromal symptoms. An apparently healthy person, for instance, is suddenly seized with the most violent pain in the region of the stomach, wherefore the erroneous opinion is held that there are 'cramps in the stomach.' Sometimes this symptom is accompanied by a chill. An attack of this kind may last from an hour to two or three days, and may leave the patient in an exhausted condition. Jaundice may be present or absent. A second attack may be observed after a few days, sometimes after a month or after years. An attack may be the effort of nature to get rid of the stones, and may be so successful that thereafter the patient remains cured. In the majority of cases, however, the attack signifies the presence of an inflammatory process (cholecystitis), which, of course, is indirectly due to the presence of the gallstones. From this it is evident that the recognition of the presence of gallstones is easy. But in many other cases cardialgia, colic of the intestine or the kidneys, movable kidney, or nervous visceral neuralgia, may be diagnosticated. In some cases the gallstones are recognized by the Rœntgen rays. A positive result, of course, is indisputable, while the negative does not prove the absence of the stones. As long as the symptoms are not severe medical treatment should be tried. During the attack morphine injections are administered. After the attack is over, Carlsbad Muehlbrunn, two tumblers full a day, and rectal infusions of olive oil are to be recommended. The diet should be light, chicken and fish being the only kinds of

meat to be advised. Flaxseed poultices over night over the liver region are also beneficial. Those who can afford it may try the Spa treatment at Carlsbad or Neuenahr in Germany, Vichy in France, or Sharon Springs or Las Vegas in the United States. If the attacks are not checked by this treatment, the surgical removal of the stones is in order, which, under the auspices of the aseptic method, has ceased to be a dangerous operation.

Cancer of the Liver is preëminently a secondary affection, while primary formation is very rare, especially cancer of neighboring organs, like the stomach, intestine, pancreas, and esophagus, leads to metastatic deposits in the liver. Sixteen per cent. of the cases of cancer of the liver are due to the formation of gallstones. In most cases a protruding tumor can be felt, the liver generally being much enlarged. Cachexia, ascites, and jaundice are also frequently found. Until lately the prognosis of cancer of the liver was absolutely unfavorable. Lately cases of temporary recovery are reported after X-ray treatment. The most effective mode of treatment is the direct irradiation of the liver after its exposure by the surgical knife. Further experiments must prove the real value of the method.

Abnormalities of the Position and Shape of the Liver. In transposition of the viscera the liver is situated at the left side of the body. In the *Annals of Surgery* (1896) a case is described in which a large gallstone was removed from the left side. Such cases are undoubtedly much more frequent than we suppose, but fail to be recognized, which ordinarily means the loss of a human life. Great as Molière was, he made a serious blunder by ridiculing the ingenious physicians of France who first detected this important fact. A very frequent abnormality of the shape of the liver is the corset or lacing-liver, which is caused by the constriction of tight waist bands. Sometimes a deep groove is thus produced which divides the liver into two halves. The consequence is an obstruction to the normal flow of bile.

LIVERMORE, *liv'ėr-mōr,* Mary Ashton (Rice): author: b. Boston, 1821, Dec. 19; d. Melrose, Mass, 1905, May 23. She was educated in the Charlestown Female Seminary, Mass.; taught several years there, in s. Va., and in Duxbury, Mass.; married the Rev. Daniel P. Livermore (Univ.); and for many years aided him in editing the *New Covenant* in Chicago; edited the *Lily,* and contributed to the editorial pages of various Univ. periodicals. During the civil war she was an agent of the U. S. Sanitary Commission, and active in field and hospital work. After the war she became a popular lyceum lecturer, and conspicuous in the temperance and woman suffrage movements. Her lectures include *What shall we do with our Daughters? Women of the War,* and *The Moral Heroism of the Temperance Re-*

form; and her publications, *Pen Pictures* (Chicago 1865); *Thirty Years too Late* (Boston 1878); her lecture *What shall we do with our Daughters?* (Boston 1883); *My Story of the War* (1888); *The Story of My Life* (1897); etc.

LIV'ERPOOL, *lĭv'ĕr-pôl:* England, a seaport city and municipal county and parliamentary borough, in Lancashire, on the Mersey estuary, about four miles from its mouth on the Irish sea, and 201 miles northwest of London. It is the second largest city in England, the most important commercial port of the British empire, and in the number of its shipping and its aggregate tonnage is the first in the world. The city, irregularly built, extends for six miles along the level ground of the dock and wharf-lined east bank of the river, and in a semicircle climbs the undulating slopes in the vicinity, the highest point of which rises 230 feet above the river. During the latter quarter of the 19th century, the demolition of old houses, the erection of vast warehouses and office buildings, the formation of new streets and the widening of old ones, have completely modernized the city. The modern public buildings are magnificent, while the new commercial buildings generally are of ornate classic design. Among the principal buildings are the town hall; the quadrangular building of the municipal offices 226 feet by 195 feet, centrally situated, with a conspicuous feature in its clock-tower and spire 200 feet high; St. George's Hall, a sumptuous building in the Corinthian style externally and internally, 420 feet long, with a colonnade of 16 columns, 200 feet long; the revenue buildings covering an area of 6,700 square yards, with a length of 467 feet, 67 feet high, and accommodating the inland revenue offices, posts and telegraphs, and the Mersey Dock and Harbor Board; the new Exchange in Italo-French Renaissance, with a frontage of 1,500 feet, lavishly decorated; and the free public library and museum, the gift of Sir William Brown, a local merchant, a handsome building of Corinthian order. One portion of the building is a reference library, with 130,000 volumes; the other section is the museum, containing departments of natural history and of antiquities. To the east of the library and museum another citizen, Sir Andrew Barclay Walker, has erected a public gallery of art, a splendid structure richly furnished with paintings and sculpture presented by other wealthy patrons of the arts, or purchased by the corporation. Between the museum and the art gallery the town council has erected as an addition to the library a public reading room, called the Picton reading room. In connection with the reference library there are nine lending libraries in various parts of the city, with over 106,000 volumes. Beside theological, legal, and medical libraries, there are also the Athenæum, the Liverpool Library, and the University Library.

Other structures include many splendid piles of commercial buildings, banks, and charitable institutions. Those associated with maritime vocations are especially conspicuous and useful. Several new hotels have been built of great size and architectural splendor. The provision markets are spacious, airy, covered buildings, and are five in number. The Haymarket is an area of about 15,000 superficial yards, nearly half of which is roofed. Among the places of worship are St. Catherine's, St. Michael's, St. Nicholas', St. Luke's, the Church for the Blind, Great George Street Chapel, Hope Street Unitarian Chapel, St. Francis Xavier's, and St. Mary's Roman Catholic chapels, St. Andrew's Scotch Church, and Sefton Park Presbyterian Church. When Liverpool was constituted a bishop's see in 1880, the parish church of St. Peter was made the cathedral, but a new cathedral is building, many liberal contributions having been made for the purpose.

Among the charitable and benevolent institutions are the royal infirmary, children's infirmary, Northern and Southern hospitals, lying-in institutions, dispensaries, etc., public disinfecting establishments, and public baths. There are also various orphanages, refuges for the destitute, and institutions for the relief of every form of human suffering. The educational institutions include the University College, Royal Institution, the Liverpool Institute, Liverpool College, school of art and gallery of art. The University College (for which a fine building has been erected) is one of those belonging to the Victoria University; it has a department of language, science, etc., and a medical department. Besides the great educational machinery erected by the school board, private schools are numerous.

Liverpool is deficient in squares and open spaces within the city boundary, there being only three of any pretensions, but it is provided with an unusual number of public parks on the margin of the populous districts. These have been mostly provided by the corporation out of the rates, and they form a cordon around the town, available to the inhabitants of each quarter. Stanley Park (100 acres) in the north of the town is well-laid out and picturesquely planted. Sefton Park, of 375 acres, is at the extreme south of the town. The ground is naturally broken into hill and hollow, the heights affording beautiful views; about 269 acres are reserved for the park, the remainder being appropriated to villa sites. The adjuncts of the park embrace a 'Rotten Row' and carriage drives, botanical gardens, lakes, cascades with rock work, pavilions, and other ornamental buildings, a conservatory, fountains, etc. The total area of public parks and pleasure grounds under the control of the corporation is 1,100 acres. Of the public cemeteries the most considerable are those of the parish of Liverpool at Anfield, the Toxteth cemetery, Kirkdale, Fazaker-

ley, and West Derby cemeteries. Liverpool is well supplied with water. Local wells furnish part, and part comes from the reservoirs in the hilly district between Bolton and Blackburn, distant from Liverpool 25 to 35 miles. From the collecting reservoirs at Rivington the water, after being filtered, is conveyed to the distributing reservoirs in town, the average quantity distributed daily being about 20,000,000 gallons, and the population supplied, about 850,000. An additional supply of water from the Vyrnwy in North Wales, the works for which were completed in 1892, yield a daily supply of about 50,000,000 gallons. This enterprise included the formation of Lake Vyrnwy, an artificial sheet of water five miles long, contained within a great dam or embankment 60 feet high across the Vyrnwy.

Liverpool is the chief outlet for the manufactures of Lancashire, West Yorkshire, and Staffordshire, and carries on an immense export and import trade, especially with the United States. It possesses a magnificent series of docks and basins, and other requisites of a great seaport. The Mersey Dock Estate, on the right or Liverpool bank of the Mersey, extending in an unbroken line for about 7 miles, since 1893 is traversed throughout by an electric trolley line. The river wall from the northern boundary of the Dock Estate to Herculaneum graving docks is over 6 miles in length. There are 63 wet docks and half-tide docks, among the largest of which are the Alexandria, Brunswick, Canada, Hornby, Huskisson, Langton, Prince's, Queen's, and Toxteth. There are numerous graving docks for the repair of iron and wooden vessels, and gridirons for their casual overhaul. The most modern of the graving docks, that at Canada Dock, is among the largest in the world, its length being 925½ feet, and width of entrance 94 feet. The total water area and quay space of the Liverpool and Birkenhead docks and basins is 550 acres, of which 385 are on the Liverpool side.

On the margins of the docks are gigantic warehouses. The quays are abundantly furnished with railway lines and every other mechanical appliance for expediting the transport of goods and economizing labor.

One of the principal river features is the floating landing-stage moored off the Prince's and George's docks, in the heart of the town. This magnificent structure, supported on iron pontoons, rising and falling with the tide, and connected with the river wall by bridges of easy gradient, is an effective engineering device to meet the tidal conditions obtaining on the Mersey, where spring tides present a difference in level between high and low water of over 30 feet, and even neap tides have a range of 13 feet. The first small stage was built in 1847, a much larger was destroyed by fire in 1874; the present stage, as enlarged in 1896, has a length of 2,478 feet, and a width of about 80 feet. The great Atlantic

liners come alongside the stage, and lie there for such time as may be necessary to receive and discharge passengers and mails, for all which traffic the Riverside station, specially constructed alongside the stage, offers a most convenient railway terminus. A great coasting passenger traffic is also centred at the landing-stage, and in the summer especially the traffic to the Isle of Man and ports on the coast of North Wales reaches immense proportions. The southern end of the stage is appropriated to passenger and freight ferry traffic between Liverpool and Birkenhead, Seacomb, New Brighton, and other suburban centres of population and recreation on the opposite bank of the Mersey. At the northern end of the stage a fixed jetty supplements its accommodation, and is more particularly used for the landing of cattle, chiefly from Ireland. The number of vessels entering and clearing at the port of Liverpool annually is over 20,000, of over 9,000,000 tons respectively.

Among the imports into Liverpool, cotton holds the chief place, the quantity imported being valued at more than $150,000,000, the total quantity imported into the kingdom being valued at more than $200,000,000. Immense quantities of wheat, flour, maize, etc., are also imported mainly from North America. Live cattle and fresh meat also form leading imports. To prevent the spread of disease, the former are dealt with at the Foreign Animals' Wharf at Birkenhead, where over 20 acres of ground are devoted to this purpose, and quarters capable of accommodating 7,600 head of cattle and 16,000 sheep at one time are provided, together with slaughter houses, chill-rooms for cooling the meat to allow of its transfer to the country, and other conveniences in suitable proportion. The average number of cattle dealt with in one year is about 250,000, and of sheep 350,000.

Other extensive imports are provisions, sugar, fruits, hides, palm and olive oil, wine and spirits, timber, tobacco, and wool. Cotton manufactures are the chief export; others are metals and articles in metal, machinery, woolens, etc. The value of the foreign and colonial merchandise imported annually is more than $600,000,000, of the home and foreign produce exported. $500,000,000; amount of customs revenue, $20,000,000. The manufactures and other industries of Liverpool are varied, among them being hemp and wire rope making, sail making, iron forging, anchor and chain cable making, iron and brass founding, the making of steam-engines and other machinery, sugar refining, soap making, alkali making, etc. The manufacture of watches and chronometers is extensive. There are many large steam mills for grinding corn, rice, colors, dyewoods, etc. Shipbuilding is carried on to a small extent.

Four lines of railroad enter the city, namely the London & Northwestern railway; the Lancashire & York-

shire; the Midland, Great Northern & Great Central, and the Great Western, to Birkenhead, and thence to Liverpool by ferry boats or by the Mersey Tunnel railway, a great work opened for traffic in 1886, 4½ miles in length, including the approaches.

The town is divided into 35 wards, which elect 137 councillors. The borough sends nine members to parliament.

Liverpool is comparatively of recent growth. A castle was built here by Roger de Poictiers, to whom William the Conqueror gave the extensive tract of land between the Mersey and the Ribble. It was a small fishing town surrounded by a high mud wall when it was besieged and taken by Prince Rupert in 1644. In 1645, the parliament settled the mill and ferry boats on the corporation as a satisfaction for their losses. In 1709, a wet dock was constructed, the first in the kingdom. From this event dated the rapid extension of its commerce and population. In 1880, Liverpool was made the see of a bishop, and in that year a charter was granted constituting it a city. The population, which in 1801 was only 77,708, in 1891 was 517,980; in 1901, 684,958; and according to official estimates in 1907 was over 730,000.

LIV'ERWORTS. See HEPATICÆ.

LIVERY, n. *liv'ėr-ĭ* [F. *livrée*, something given out in stated quantities at stated times to servants, as clothes, or the supply of victuals or horse-provender—from *livrer*, to deliver—from mid. L. *liberārĕ*, to deliver, to give freely]: the uniform worn by servants; the state of being kept and fed at a certain rate, as horses; the body of liverymen in the city of London; in *OE.*, and in *law*, the act of giving or taking possession; delivery; writ by which possession is obtained, e.g., 'livery of seisin' (see FEOFFMENT): V. to clothe in a livery or distinctive dress. LIV'ERYING, imp. LIV'ERIED, a. *-ėr-ĭd*, wearing a livery. LIVERY-SERVANTS, servants who wear distinctive dresses provided by their masters. LIVERY-STABLE, a stable where horses are kept and maintained for hire. LIV'ERYMAN, n. *-ĭ-măn*, a freeman of the city of London, entitled to wear the distinguishing livery-gown of his company on certain occasions, and to enjoy certain privileges. The word *Livery* referred in its origin to the custom under the Merovingian and Carlovingian kings, of delivering splendid habits to the members of their households on great festivals. In the days of chivalry, the wearing of livery was not, as now, the special characteristic of domestic servants. The duke's son, as page to the prince, wore the prince's livery, the earl's son bore the duke's colors and badge, the son of the esquire wore the livery of the knight, and the son of the gentleman that of the esquire. Cavaliers wore the livery of their mistresses. There was also a large class of armed retainers in livery attached to many of the more powerful nobles, who were engaged expressly to use the strong hand in their masters' quar-

reïs. By the colors and badge of the retainer was known the master under whom he served. The livery colors of a family are taken from their armorial bearings, being generally the tincture of the field, and that of the principal charge, or the two tinctures of the field are taken instead, where it has two. They are taken from the first quarter in case of a quartered shield. These same colors are alternated in the Wreath (q.v.) on which the crest stands. The royal family of England have sometimes adopted colors varying from the tinctures of the arms. The Plantagenets had scarlet and white; the House of York, murrey and blue; white and blue were adopted by the House of Lancaster; white and green by the Tudors; yellow and red by the Stuarts, and by William III.; and scarlet and blue by the House of Hanover. An indispensable part of the livery in former times was the Badge (q.v.). The Church of Rome has its liveries for apostles, confessors, martyrs, virgins, and penitents.

The freemen of the guilds or corporations which embrace the different trades of London, are called liverymen, because entitled to wear the livery of their respective companies. In former times the wardens of the companies were accustomed yearly to deliver to the lord mayor certain sums, 20 shillings of which was given to individuals who petitioned for the money, to enable them to procure sufficient cloth for a suit, and the companies prided themselves on the splendid appearance which their liveries made in the civic train. The common-councilmen, sheriffs, aldermen, and some other superior officers of the city, are elected by the liverymen of London; and till the Reform Bill 1832, they had the exclusive privilege of voting for members of parliament for the city. See GUILD.

LIVID, a. *lĭv'ĭd* [F. *lividé*—from L. *livĭdus*, livid: It. *livido*]: discolored in the flesh, as from a blow; black and blue; of a lead color. LIV'IDNESS, n. *-nĕs*, or LIVIDITY, n. *lĭv-ĭd'ĭ-tĭ*, state or quality of being black-and-blue.

LIVINGSTON, *lĭv'ĭng-ston*, BROCKHOLST, LL.D.: 1757, Nov. 25—1823, Mar. 18; b. New York. He graduated at Princeton 1774. Entering the army as *aide-de-camp* to Gen. Schuyler, he afterward became major under Gen. Arnold, was present at the surrender of Burgoyne, and was promoted to the rank of colonel before he left the army. He went to Spain as secretary to John Jay 1779. Returning 1782, he studied law, was admitted to the bar next year; and appointed a judge of the N. Y. supreme court 1802. After four years he was appointed a justice of the U. S. supreme court, and held the office till his death at Washington.

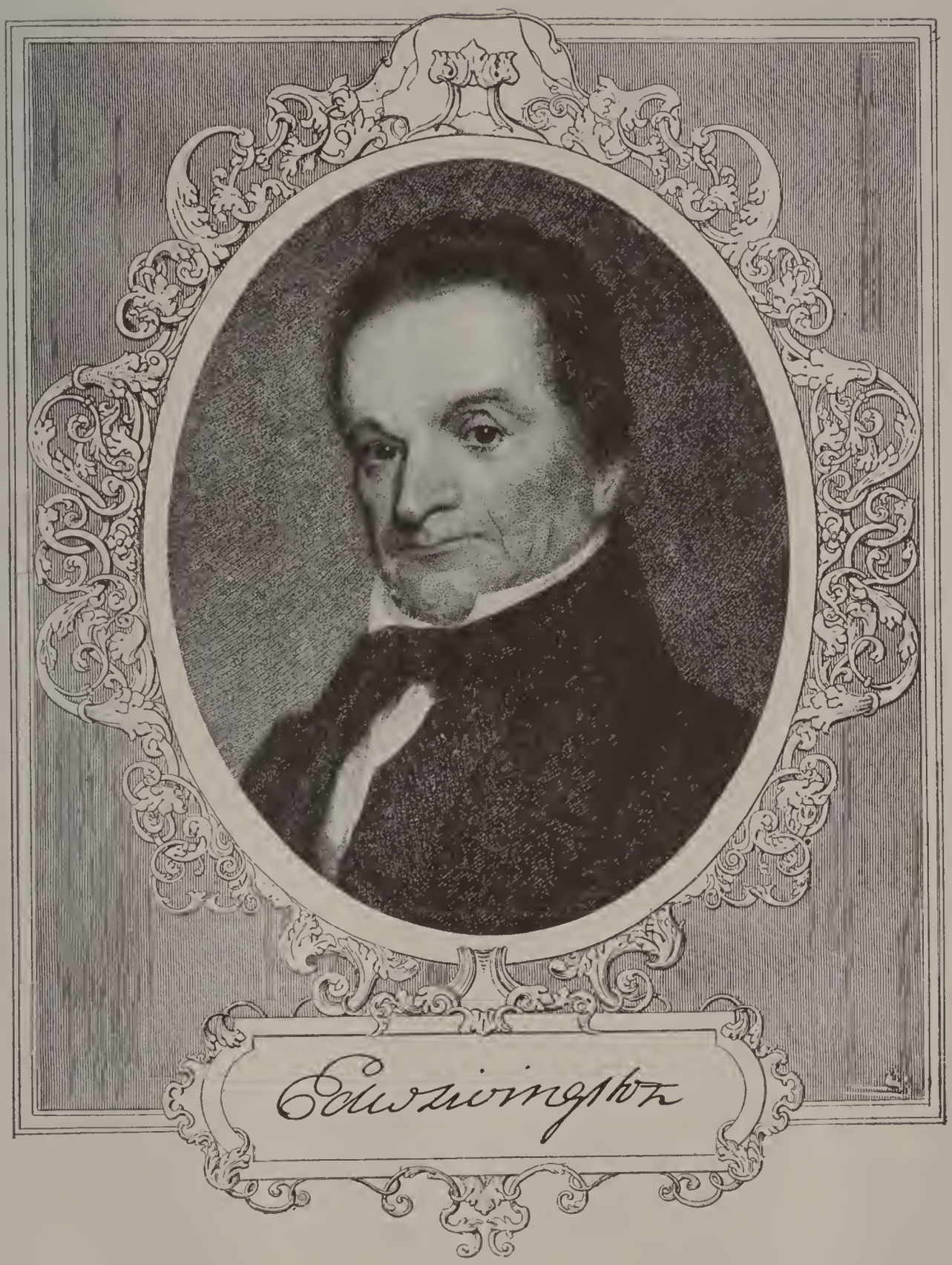
LIV'INGSTON, EDWARD: jurist and statesman: 1764, May 26—1836, May 23; b. Livingston (afterward Clermont), Columbia co., N. Y.; of a family which, for nearly a century, had been of great distinction in the colony

(see LIVINGSTON, JOHN). Livingston was son of Robert Livingston, judge of the supreme court of New York, and youngest of a very numerous family. He graduated at Princeton College 1781, and studied law under his brother, Robert R. Livingston, 18 years his senior (see below), and gave special attention to Roman jurisprudence. He was called to the bar, and soon obtained extensive practice. He had spent his youth among the founders of American independence, whom he had known as visitors of his father, and he at once attained a prominent position. He was elected a member of congress 1794; federal attorney and mayor of New York 1801; and he would probably have been known only as a prosperous lawyer, had not a great misfortune at this period befallen him. Livingston, as federal attorney, was intrusted with the collection of debts to the state recovered by legal proceedings. He had the greatest aversion to accounts, and intrusted this part of his duty to a clerk, a Frenchman, who appropriated the funds to his own purposes. When Livingston discovered what had happened, he at once ascertained the balance due to the state, handed over his whole property to his creditors, threw up his appointment, and resolved to quit New York. No entreaty on the part of his fellow-citizens could induce him to remain. Louisiana had just been annexed to the United States, through negotiations conducted by his brother at Paris, and he resolved to settle in the new state. He joined the New Orleans bar 1804, and at once obtained a lucrative practice. He had great difficulties to encounter. The business had to be conducted partly in French and Spanish. The law administered was a strange compound of municipal regulation, Spanish and French law, and the Roman law of the civilians. A proposal was made to introduce the common law of England, and this would have been much to the pecuniary advantage of Livingston, but he opposed the scheme in an eloquent and convincing speech to the legislature of Louisiana, and it was decided that the law of the state should remain based upon the civil rather than the common law. In the dispute with England 1814-15, Livingston became *aide-de-camp* and secretary to Gen. Jackson, and attracted much notice by the admirable bulletins that he wrote during the campaign. .In 1820, he was appointed to draw up a code of civil procedure for Louisiana. It was the simplest known till that time, was found to work admirably, and received the warmest approval from Bentham and other jurists. Livingston was then employed in reducing to system the civil laws of Louisiana. He had to aid him in the task the French and other modern codes, the nomenclature of Scotch law, and a familiar acquaintance with all that is most valuable in English jurisprudence, and the work produced, the 'Civil Code of Louisiana,' is undoubtedly the most successful adaptation of the civil law to the conditions of

modern society. It was adopted in Louisiana 1823, and has since become the law of many other states. Livingston was then employed to prepare a new criminal code, and in a preliminary treatise he laid down the principles on which he was to proceed. He proposed the abolition of the punishment of death, and a penitentiary system, which at once drew general attention to his labors. His book was reprinted in London, translated into French, and made a sensation all over Europe, and the author received the congratulations of the most eminent publicists and politicians of England, France, and Germany. His code of crimes and punishments was completed, but not adopted without modifications. Livingston was elected, 1829, U. S. senator from Louisiana, and 1831 appointed secretary of state under President Jackson. Two years later, he went to France as U. S. minister plenipotentiary to support a demand for $5,000,000 made by the U. S. government for indemnity on account of French spoliations, and he succeeded in securing payment. He had married a lady of New Orleans of French family and education, had been long conversant with the French language, in which he had been accustomed to plead before the courts of New Orleans, and he became intimately acquainted with the leading jurists and politicians of France. He was admitted an associate of the Acad. of Moral and Political Sciences, and received the warmest tribute of respect as one of the greatest philosophical lawyers of his time, though his distinction at home had been won chiefly as a careful and painstaking man of business. Livingston died at his own estate on the Hudson, in consequence of drinking cold water when he was overheated. See notices of his life in French by M. Taillandier and by M. Mignet; *Life*, by C. H. Hunt; and complete *Works* (2 vols. 1873).

LIV'INGSTON, Henry Beekman: soldier: 1750, Nov. 9—1831, Nov. 5; b. Clermont, N. Y.; son of Judge Robert R. Livingston. In 1775, Aug., he raised a company of militia and accompanied his brother-in-law, Gen. Richard Montgomery, on his expedition to Canada, and for his gallantry at the capture of Chambly was voted a sword of honor by congress. He was appointed aid to Gen. Philip Schuyler 1776, Feb., and colonel of the 4th battalion of N. Y. volunteers, Nov.; served with Lafayette in Rhode Island and at Valley Forge; and resigned from the army 1779. After the war he practiced law, and held the offices of attorney general, judge, and chief justice of the N. Y. supreme court, and president of the N. Y. Soc. of the Cincinnati. He was appointed brigadier general in the war of 1812-15.

LIV'INGSTON, John: eminent Scotch Presb. clergyman: b. Kilsyth, Scotland, 1603, June 21. He preached in Ireland, and was one of two commissioners sent by the Scotch Kirk to Breda, Holland, to treat with Charles II. Refusing to take the oath of allegiance, he was ban-


Edw Livingston

ished, and went 1663 to Holland, where he spent his closing years as pastor of the Scotch Kirk at Rotterdam. He was author of several works, of which the best known is his Autobiography. He was ancestor of the Livingston family of N. Y. See LIVINGSTON, EDWARD: ETC.

LIVINGSTON, PETER VAN BRUGH: American merchant: b. Albany, N. Y., 1710, Oct.; d. Elizabethtown, N. J., 1792, Dec. 28. He was graduated from Yale in 1731, at New York was active in the shipping business with William Alexander, Lord Stirling, and in 1755 provided the supplies for Governor Shirley's expedition to Acadia. He was long a member of the provincial council, and in 1775-6 was a delegate to the 1st and 2d provincial congresses of New York, of the former of which he was president. In 1776-8, he was treasurer of the congress. He was prominent in most of the measures that led up to the revolutionary war, and was referred to by John Adams as 'stanch in the cause.'

LIV'INGSTON, PHILIP: 1716, Jan. 15—1775, June 12; b. Albany, N. Y.: signer of the Declaration of Independence. He graduated at Yale 1737, engaged in mercantile business in New York, was alderman 1754-63, member of the provincial assembly, delegate to the stamp-act congress 1765, member of the first continental congress 1774, president of the provincial congress 1775, Apr., and one of the N. Y. delegates that signed the Declaration of Independence. In 1777, he was a state senator, and was elected to the first federal congress. He was a founder of the New York chamber of commerce, and the New York Soc. library, one of the first governors of the New York hospital, urged the establishment of the present Columbia College, and aided in erecting the first Methodist church in the United States.

LIV'INGSTON, ROBERT R.: eminent lawyer and statesman: 1746—1813, Mar. 26; b. New York; son of Robert Livingston and brother of Edward Livingston; lineal descendant from the fifth Lord Livingston (who was appointed guardian of Mary, Queen of Scots) and from Lord Livingston's grandson, the Rev. John Livingston, minister of Ancrum, Teviotdale, distinguished Presb. divine (see LIVINGSTON, JOHN). John's son, Robert Livingston (b. Ancrum, 1654), emigrated to America while a lad, settling in the then Dutch village of Albany, on the Hudson. Later, he bought from the Indians a vast tract of land, more than 160,000 acres, on the banks of the river; and this property he had erected into the township and manor of Livingston. His great-grandson, Robert R. Livingston, graduated at King's (now Columbia) College, N. Y. He was one of the five members of the committee of the congress who had in charge to draw up the Declaration of Independence. When the constitution of N. Y. was settled, he was appointed chief judge (chancellor), and retained the office till 1801. He was

then sent to Paris as minister plenipotentiary to negotiate the cession of Louisiana to the United States, and discharged that duty with rare ability, securing to the United States the vast territory between the Mississippi and the Rocky Mountains, extending from the Spanish to the British possessions. This was censured as a rash and useless purchase; and soon afterward Livingston withdrew from public life. He had rendered his country a service of incalculable importance, for which he had received only censure. He encouraged and enabled Fulton to construct his first steamer, and introduced in America the use of sulphate of lime as a manure, and the merino sheep.

LIVINGSTON, WILLIAM, LL.D.: American statesman: b. Albany, N. Y., 1723, Nov. 30; d. Elizabethtown, N. J., 1790, July 25. He was graduated from Yale in 1741, was admitted to the bar in 1748, attained distinction in practice, was elected to the provincial legislature from Livingston manor, and in 1760 established himself at the well known country-seat of 'Liberty Hall' at Elizabethtown, N. J. In 1774, he became a delegate for New Jersey province to the 1st continental congress, and later served in the 2d and 3d congresses. He was a member of the committee of the 1st congress that prepared the address to the people of Great Britain. In 1776, June, he took command of the militia of New Jersey, with rank of brigadier-general, and was thereby prevented from signing the Declaration of Independence. On Aug. 28, 1776, he was elected first governor of New Jersey, and this post, having resigned his military command, he held until his death. During the first two years of his administration the state of New Jersey was perhaps more than any other exposed to the operations of the British forces, and this was the cause of many difficulties and dangers. The legislature was compelled to meet at various different places, and Tory hostility was strong against the governor, whose capture was several times attempted. In his message of 1777 to the assembly, Livingston recommended the abolition of slavery, and in 1786 caused the passage of an act forbidding the importation of slaves into New Jersey and himself liberated his two slaves. In 1787, he was appointed a delegate to the convention that framed the Constitution of the United States. He was at one time president of the 'Moot,' the well known lawyers' club founded at New York in 1770. He published in 1752, 52 numbers of *The Independent Reflector*, a weekly periodical, in which he opposed the Episcopal Church. His writings include: *Philosophic Solitude* (1747); *A Funeral Eulogium on the Rev. Aaron Burr* (1757); and *A Digest of the Laws of New York, 1691-1762* (with W. Smith, Jr., 1752-62). Consult: Sedgwick, *Life and Letters of William Livingston* (1833).

LIVINGSTON: Mont., city, county-seat of Park co.; on the Yellowstone river, and on the Northern Pacific

railroad; about 45 miles north of the Yellowstone National Park, and 100 miles southeast of Butte. It is situated in a mining and lumbering section of the state. A branch of the Northern Pacific railroad extends from Livingston to the Yellowstone Park. It is the division headquarters for the Northern Pacific. The railroad depot cost $75,000. Its chief manufacturing establishments are machine-shops, lime-works, railroad shops, and lumber-mills. Its trade is mainly in mining tools, wool, coke, coal, and gold, and it is a distributing centre for groceries, dry goods, and clothing for an extensive region. Livingston is a favorite resort for sportsmen, as game and fish abound. Pop. (1900) 2,778; (1910) 5,359.

LIVINGSTON COLLEGE: a coeducational institution founded in 1882, in Salisbury, N. C., under the auspices of the African Methodist Church. There are connected with the school 25 instructors and over 350 students. The library contains about 5,000 volumes; the buildings and grounds are valued at $130,000; and the productive funds $110,000. The college course leads to the A.B. degree.

LIVINGSTONE, *liv'ing-ston,* DAVID: African explorer and Christian missionary: 1813, Mar. 19—1873, May 1; b. Blantyre, Lanarkshire, Scotland; of family humble but self-respecting. At the age of 10 he became a 'piecer' in a cotton-factory, and for many years was engaged in hard work as an operative. An evening school furnished him with the opportunity for acquiring some knowledge of Latin and Greek, and, finally, after attending a course of medicine at Glasgow Univ., and the theological lectures of Dr. Wardlaw, professor of theology to the Scotch Independents or Congregationalists, he offered himself to the London Missionary Soc. (Nonconformist) by which he was ordained as a medical missionary 1840. In the summer of that year he landed at Port Natal, s. Africa. Circumstances made him acquainted with the Rev. Robert Moffat, a distinguished missionary whose daughter he subsequently married. For 16 years Livingstone proved himself a faithful and zealous servant of the London Missionary Society. The two most important geographical results achieved by him in this period were the discovery of Lake Ngami, 1849, Aug. 1, and his crossing the continent of s. Africa, from the Zambesi (or Leeambye) to the Congo, and thence to Loando, cap. of Angola, which occupied him about 18 months (1853, Jan. —1854, June). In 1854, Sep., he left Loando on his return across the continent, reached Linzanti (lat. 18° 17′ s., long. 23° 50′ e.), capital of the great Makololo tribe, and thence proceeded along the banks of the Leeambye to Quilimane on the Indian Ocean, which he reached 1856, May 20. He then took ship for England. In 1857, Livingstone published *Missionary Travels and Researches in South Africa,* a work of great interest and value. Returning 1858 as British consul at Quilimane, he spent several years in further exploring the Zambesi, in

ascending the Shiré, and discovering Lake Shirwa and Lake Nyassa—the Maravi of the old maps. A narrative of these discoveries was published during his visit to England 1864-5. In the meantime, Lakes Tanganyika, Victoria Nyanza, and Albert Nyanza, had been discovered by Burton Speke, and Baker, but the true source of the Nile was still a problem. With a view to its solution, Livingstone, 1866, entered the interior, and nothing was heard of him for two years. The communications received from him afterward describe his discovery of the great water-system of Chambeze in the elevated region s. of Tanganyika. It flows first w. and then turns n., forming a succession of lakes w. of the Tanganyika. To determine its course after it leaves these, whether it joins the Nile, or turns w. and forms the Congo, was the grand task which Livingstone resolved to accomplish. He was baffled by inundations, the hostility of the slave-dealers, and by the want of supplies, which were habitually delayed and plundered by those who conveyed them. When nothing certain had been heard of him for some time, Henry M. Stanley, sent by the *New York Herald*, with abundant supplies for Dr. Livingstone, boldly pushed his way from Zanzibar to Ujiji, where 1871 he found the traveller in great destitution. On parting with Stanley, Livingstone—who did not purpose to remain in Africa more than a year longer—started on a fresh exploration of the river-system of the Chambeze or Lualaba, convinced that it would prove to be the head-waters of the Nile; but overcome by hardships and by sickness resulting from the climate, he died at Ilala, beyond Lake Bemba. His body was brought home 1874, Apr., and interred in Westminster Abbey. Dr. Livingstone regarded himself as a pioneer missionary whose work was to open the country for Christianity, commerce, and civilization. When he began his explorations vast regions of the map of Africa were a blank. He greatly enlarged geographical knowledge, depicted the manners and life of the unknown African peoples, and roused the indignation of the world against the Arab slave-trade. Consult: *Livingstone's Last Journals* (1874); Stanley, *How I Found Livingstone* (1873); Blaikie, *Livingstone's Personal Life* (1880); Hughes, *David Livingstone* (1891); Johnston, *Livingstone and the Exploration of Central Africa* (1897); Machlachlan, *David Livingstone*, in *Famous Scots Series* (1900).

LIV'INGSTONE RIVER (in Africa). See CONGO.

LIVINGSTONIA MISSION: a Christian enterprise in Africa, whose chief settlement is at Cape Maclear at the s. end of Lake Nyassa (q.v.). It was based on a suggestion made by Dr. Livingstone that this lake was the best position for the establishment of a mission with a view to the annihilation of the Portuguese and Arab slave-trade in e. Africa. An expedition, costing about $30,000, was equipped 1875 by the Scotch Presb. churches, for

establishing a mission here. Another station called Blantyre has been planted in the Shiré Highlands, within easy distance of the lake. As yet the chief industries are iron manufacture, basket-making, and cloth manufacture from the bark of trees and cotton. With the exception of the 70 m. of the Murchison Falls, there is unbroken water communication between the head of Nyassa and the Indian Ocean.

LIVIUS, *lĭv'ĭ-ŭs*, TITUS (known as LIVY, *lĭv'ĭ*): most illustrious of Roman historians: b. at Patavium (Padua), B.C. 61, according to Cato, but according to Varro B.C. 59, the year of the great Cæsar's first consulship. We know nothing of his early life, except that he practiced as a rhetorician, and wrote on rhetoric. There is internal evidence which makes it probable that he did not commence his great history till he was near middle age. He lived to see his 80th year; and having been born under the republic, died under Tiberius. His fame was so thoroughly established and widely spread, even during his lifetime, that a Spaniard travelled from Gades to Rome only to see him. Quintilian, in claiming for the Romans equal merit in the department of history with the Greeks, compares Livius to Herodotus, and there is no doubt that his countrymen regarded him as their greatest historical writer. The story that Asinius Pollio pretended to discover a certain provincialism or *Patavinity* in his style, is probably false; but even if it be true, modern criticism is unable to discover in what the peculiarity consisted; for Livius's work is one of the greatest masterpieces of Latin, or of human composition. Originally, the Roman history of Livius was comprised in 142 books, divided into *tens* or *decades;* but only 30 books, with the greater part of five more, are extant. Instead of a complete narrative from the foundation of the city to the historian's own time, we have detailed portions, the most valuable of which are the first decade, containing the early history, and the third containing the wars with Hannibal. Among the surviving fragments of what is lost, is a character of Cicero, preserved in the *Suasoria* of Seneca, the execution of which makes us deeply regret that time has not spared Livius's account of the transactions of his own period.

In classing Livius in his proper place among the great historians of the ancient and modern world, we must not think of him as a critical or antiquarian writer—a writer of scrupulously calm judgment and diligent research. He is pre-eminently a man of beautiful genius, with an unrivalled talent for narration, who takes up the history of his country in the spirit of an artist, and makes a free use of the materials lying handiest, for the creation of a work full of grace, color, harmony, and a dignified ease. Prof. Ramsay has remarked, that he treats the old tribunes as if they were on a level with the demagogues of the worst period; and Niebuhr censures the errors of the

same kind into which his Pompeian and aristocratic prepossessions betrayed him. But this tendency, if it was ever harmful, is harmless now, and was closely connected with that love of ancient Roman institutions and ancient Roman times which at once inspired his genius, and was a part of it. And the value of his history is incalculable, even in the mutilated state in which we have it, as a picture of what the great Roman traditions were to the Romans in their most cultivated period. The literary talent most conspicuous in Livius is that of a narrator, and the English reader perhaps derives the best idea—though it is but a faint one—of his quality, from the histories of Goldsmith, or the *Tales of a Grandfather* of Sir Walter Scott. He does not rival Tacitus in portraiture or in tragic power, but no writer has ever surpassed him in the art of telling a story; and the speeches which, according to the antique fashion, he puts into the mouths of his historic characters, are singularly ingenious, pointed, and dramatically real. There is also something in a high degree winning and engaging about what we may call the moral atmosphere of Livius's history, which nobody can read without feeling that the historian had a kindly, tender disposition—a large, candid, and generous soul. The *editio princeps* of Livius, which did not contain all that we now have of the work, was published at Rome about 1469, and MSS. of parts of Livius were existing in that century which have since disappeared. The most celebrated editions are those of Gronovius, Crevier, Drakenborch, Zingerle, and Ruddiman; and, in recent times, esteemed recensions of the text have been issued by Madvig, Alschefski, Weissenborn, Fügner, Niemann, and Taine.

LIVIUS ANDRONICUS, *lĭv'ĭ-ŭs ăn-drŏ-nī'kŭs:* father of Roman dramatic and epic poetry: by birth a Greek, native probably of Tarentum, whose period was about the middle of B.C. 3d c. He translated the Odyssey into Latin Saturnian verse, and wrote tragedies, comedies, and hymns after Greek models. Mere fragments are extant, of which a collection is in Bothe's *Poetæ scenici Latini* (V. Halberst 1823); and Düntzer's *Livii Andronici Fragmenta Collecta et Illustrata* (Berlin 1835).

LIVONIA, *lĭ-vō'nĭ-a* (Ger. *Lievland*): one of the three Baltic provinces of Russia, to which belong also the islands of Oesel, Man, and Runo; 18,088 sq.m. The country is mostly flat, one-fourth of it covered with wood. The soil is of moderate fertility; nevertheless agriculture, and cattle and sheep breeding are brought to high perfection. Livonia has many extensive factories and distilleries belonging to the government, also cloth manufactories, one of which, near Pernau, is very extensive. The inhabitants of the country are of Finnish and Lettish descent; those in the towns are chiefly Germans, with a sprinkling of Russians, Poles, and Jews. Livonia, till

the 17th century, included the three Baltic provinces of Courland, Livonia, and Esthonia. Pop. 1,300,640.

LIVONIAN, n. *lĭ-vō'nĭ-ăn:* a Finnic language in the n.e. of Livonia, one of the three Baltic provinces of Russia.

LIVORNO, *lē-vŏr'nō,* or LEG'HORN: province of Italy, in the division of Tuscany, on the w. coast. The island of Elba (q.v.) belongs to this province. Fruit and the vine are largely cultivated. The chief city is Leghorn (q.v.), whose Italian name is Livorno. Pop. (1901) 123,877.

LIVRAISON, n. *lĭv'rā-zōng'* [F. *livraison,* delivery of goods—from *livrer,* to deliver—from mid. L. *liberātĭōnem,* delivery]: a part of a book which is published in successive portions or numbers; a commercial term for a partial transfer of goods.

LIVRE, n. *lē'vr* [F. *livre*—from L. *libra,* a pound]: name of an ancient French coin, derived from the Roman *Libra* or *As* (q.v.). There were livres of different values, the most important being the *Livre Tournois* (of Tours), which was considered the standard; and the *Livre Parisis* (of Paris), which was equal to $\frac{5}{4}$ths of a livre Tournois. In 1795, the livre was superseded by the franc (80 francs = 81 livres Tournois: see FRANC).—LIVRE was also the ancient French unit of weight, and was equal to 17.267 oz. avoirdupois: the Kilogramme (q.v.; see also GRAM) has taken its place.

LIV'Y. See LIVIUS, TITUS.

LIXIVIAL, a. *lĭks-ĭv'ĭ-ăl* [L. *lixīvĭŭs,* made into lye—from *lix,* lye]: containing the salt extracted from wood-ashes; resembling lye. LIXIV'IATE, v. *-ĭ-āt,* to dissolve out or extract the saline matter from wood-ashes; to form lye: ADJ. making a lixivium. LIXIV'IATING, imp. LIXIV'IATED, pp.: ADJ. reduced to lixivium. LIXIV'IA'TION, n. *-ā'shŭn,* operation or process of extracting alkaline salts from ashes by pouring water on them, the water imbibing the salts: process of washing or steeping certain substances in a fluid, for the purpose of dissolving a portion of their ingredients, and so separating them from the insoluble residue. LIXIV'IUM, n. *-ĭ-ŭm,* the water which has been impregnated with alkaline salts from wood-ashes.

LIZARD, n. *lĭz'ėrd* [F. *lézard;* It. *lucerta*—from L. *lacerta,* a lizard]: popular name for such animals of the reptile kind, as the chameleon, iguana, etc., which have tails and legs, and are covered with scales. More strictly (*Lacerta*), genus of saurian reptiles, type of a numerous group, in which Monitors (q.v.), etc., are included, and to which the *Megalosaurus* and other large fossil saurians are referred. The name lizard is indeed often extended to all the saurian reptiles; but in its more restricted sense it is applied only to a family, *Lacertidæ,* none of which attain large size, while most of them are small, active,

brilliantly colored, and bright-eyed creatures, loving warmth and sunshine, abounding chiefly in the warmer parts of the old world. They have a long, extensile, forked tongue; the body is generally long, and terminates in a rather long tail; the feet have each five toes, furnished with claws; the upper parts are covered with small imbricated scales; the scales of the under parts are larger; a collar of broad scales surrounds the neck; the bones of the skull advance over the temples and orbits; the back part of the palate is armed with two rows of teeth. They feed chiefly on insects. The SAND LIZARD (*L. agilis*, or *L. stirpium*) is about seven inches long, variable in color and marking, but generally sandy-brown on the upper parts, blotched with darker brown, and having a lateral series of black, rounded spots, each of which has a yellowish-white dot or line in the centre. The COMMON LIZARD, or VIVIPAROUS LIZARD (*Zootoca vivipara*), is smaller, more slender, very variable in color, a dark-brown generally prevailing in the upper parts. Both are harmless creatures, as are all the others of this family. Larger species are found in s. Europe. Some of the lizards are quite susceptible of being tamed. They are remarkable for the readiness with which the end of the tail breaks off; the flinging of a glove or handkerchief on one when it is trying to make its escape, is often enough to cause the separation of this portion, which lies wriggling, while the animal hastens away. The lost portion is afterward reproduced. Lizards in cold countries become torpid in winter.

LIZ'ARD, in Heraldry: denoting either—1. The reptile usually so-called; or, 2. A beast somewhat resembling the wild-cat, and said to be found in several countries of n. Europe, represented with brown fur, and large spots of a darker shade.

LIZARD POINT, *lĭz'ėrd poynt:* a cape in Cornwall, so called from having been a place of retirement for *lazars*, or persons afflicted with leprosy. See CORNWALL.

LLAMA, n. *lâ'mă:* a priest; Buddha. See LAMA.

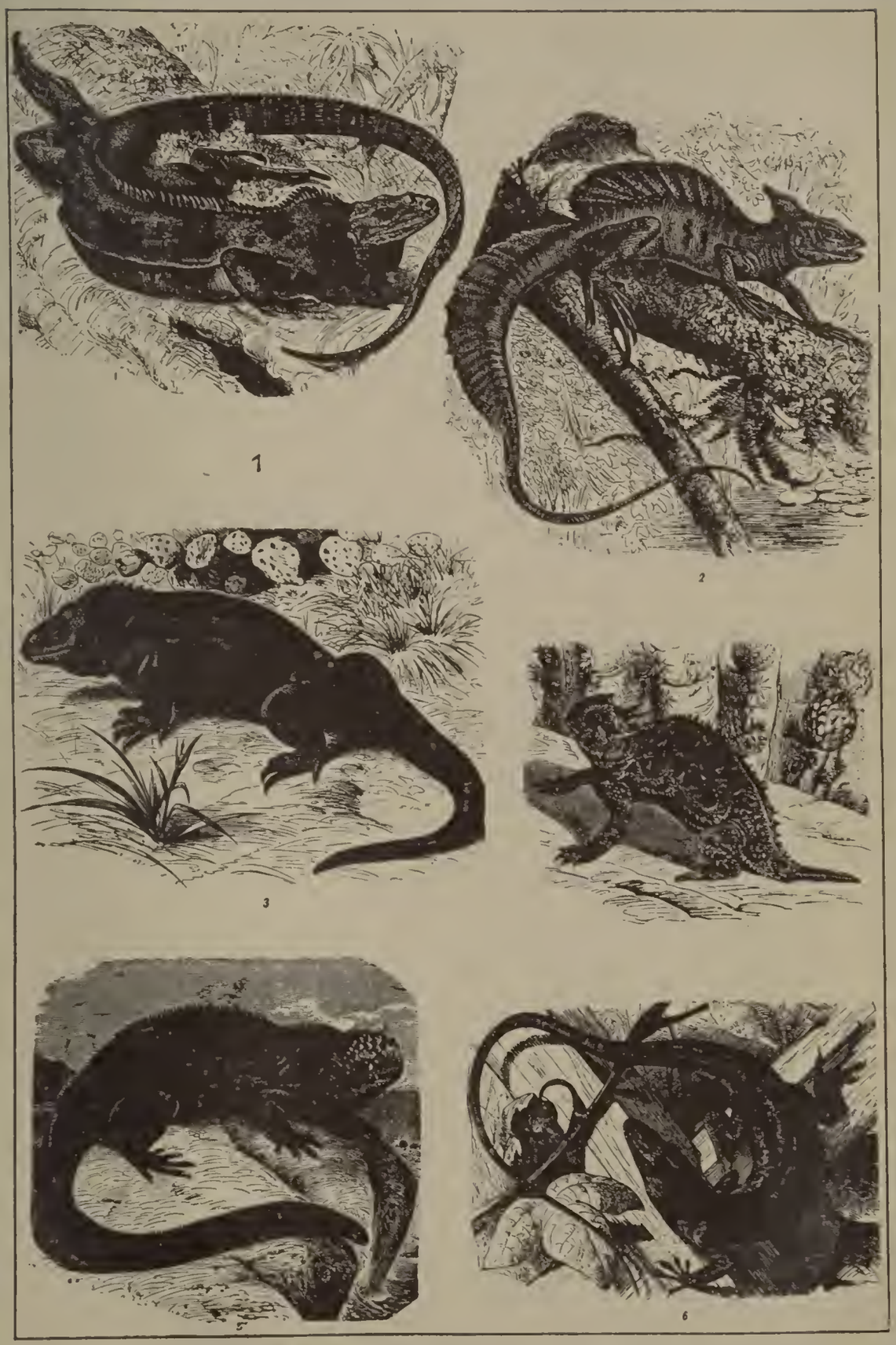
LLAMA, or LAMA, n. *lâ'mă* [Peruvian]: animal of the camel kind, more lightly built, and without a hump, peculiar to S. America. See LAMA.

LLANELLY, *lă-nĕl'lĭ*, W. *thlâ-nĕth'lē:* borough, manufacturing town, and seaport of S. Wales, county of Caermarthen, 16 m. s.e. of the town of Caermarthen. The mineral wealth of the vicinity, and the easy access to the sea, have raised the town to commercial importance. The Cambrian copper-works employ a great number of the inhabitants; there are also silver, lead, iron, and tin-works, and a pottery. Coal is largely exported. Pop. of parliamentary borough 24,213.

LLA'NO ESTACA'DO. See STAKED PLAIN.

LLANOS, n. *lâ'nōz* [Sp.]: vast, flat, treeless plains, along the banks of the Orinoco, in the n. portion of S.

REPRESENTATIVE IGUANID LIZARDS.



1. Ring-tailed Iguana (*Cyclura carinata*).
2. Helmeted Basilisk (*Basilicus Americanus*).
3. Galapagos Land-lizard (*Conolophus subcristatus*).
4. Horned toad Lizard (*Phrynosoma cornutum*).
5. Galapagos Sea-lizard (*Amblyrhyncus cristatus*).
6. Red-throated Anolis (*Anolis Carolinensis*).

America, covered partly with tall, luxuriant grass, partly with drifting sand, and stocked with innumerable herds of cattle. They resemble the more southern Pampas (q.v.), and the N. American Savannahs (q.v.). The inhabitants, a vigorous race of shepherds, are called Llaneros.

LLANQUIHUE, *lyân-kē'wā:* district of Chili, bounded n. by Valdivia, e. by the Andes Mts., s. by a strait separating it from the n. end of Chiloe and by the Gulf of Ancud, w. by the Pacific; 8,350 sq.m. It is mostly a plain drained by the river Maullin, and covered by forests and many picturesque lakes, of which the largest is Lake Llanquihue. The climate is mild and healthful; the soil is fertile, resembling that of the n. coast of Europe. All the European vegetables are raised, and large quantities of potatoes, wheat, and other grain. Coal is found in the s. part, and easily taken to the coast over the good roads. The province has over 50 free public schools. The capital and principal town is Puerto Montt, on the Gulf of Ancud. Pop. of district about 73,000.

LLORENTE, *lyō-rĕn'tā,* Juan Antonio: 1756, Mar. 30 —1823, Feb. 5; b. Rincon del Soto, near Calahorra, Spain: historian of the Inquisition. He was educated by his maternal uncle, and received priest's orders 1779. He took his degree in canon law, and was named successively advocate of the Council of Castile 1781, vicar-gen. of Calahorra 1782, and finally secretary of the Inquisition 1789. Llorente was early attached to the liberal party. On the fall of Jovellanos, he was deprived of his employments, and remained in disgrace till 1805, when he recovered favor as the reward of a literary service of questionable character which he rendered to Godoy, by a historical essay against the liberties of the Basque provinces. On the intrusion of the Napoleon dynasty, Llorente became a zealous partisan of the French, and an active instrument of the French policy, to which he lent all his support at the press, as well as in office; and being obliged to flee, on the restoration of Ferdinand, he fixed his residence in Paris, where he published the work to which his celebrity is due—*Critical History of the Inquisition.* This work, which professes to be founded on authentic documents, though throwing much light on a subject previously inaccessible, has lost most of its value by its plainly partisan character, and by the exaggerations in which it abounds (see Inquisition). Written by Llorente, in Spanish, it was translated into French, under the author's eye, by Alexis Pellier (Par. 1817, 18), and has been translated into most of the European languages. Llorente published, during his residence in Paris, several other works. His work, *Portraits Politiques des Papes,* compelled him to quit Paris 1822, and a few days after he reached Madrid he died. Most of his works were published in Spanish and in French.

LLOYD, *loid*, CHARLES HARFORD, M.A., MUS.D.: English musician: b. Thornbury, Gloucestershire, 1849. He displayed musical talent early, and at 10 was organist of Rangeworthy Church, and after 1862 studied music with Barrett of Bristol, confining his attention almost entirely to Bach and Beethoven. He was graduated from Oxford, where he came under the influence of Stainer, and definitely determined to make music his calling. He conducted the Gloucester musical festivals of 1877 and 1880, was organist of Gloucester cathedral in 1876 and of Oxford cathedral in 1882. Since 1892 he has been precentor and musical instructor at Eton. Among important compositions of his are the cantatas of *Hero and Leander; The Song of Balder; Andromeda; Alcestis; Song of Judgment; Longbeard's Saga.* He has also written many canticles and anthems for the church, glees, madrigals, and part songs, choruses, etc., and several instrumental pieces.

LLOYD, CURTIS GATES: American mycologist: b. Florence, Ky., 1859, July 17. One of the founders of the Lloyd Library and collector of one of the most complete mycological museums in America. He is author of a series of bulletins on *Mycological Notes;* and co-author of *Drugs and Medicines of North America.* Mr. Lloyd has done much toward correcting existing errors respecting mycological species.

LLOYD, DAVID DEMAREST: American playwright: b. New York, 1851; d. Weehawken, N. J., 1889. He was a brother of H. D. Lloyd (q.v.). He was graduated at the College of New York, and became a member of the staff of the New York *Tribune.* As a correspondent at Albany in 1875 he was prominent in exposing the canal ring. He was the author of four plays: *For Congress* (1883); *The Woman Hater* (1885); *The Dominie's Daughter* (1887); *The Senator* (1889).

LLOYD, HENRY DEMAREST: American writer on economics: b. New York, 1847, May 1; d. 1903, Sep. 28. He was graduated from Columbia University; lectured on political economy in New York schools; studied law, and was admitted to the bar in 1869. In 1872, he went to Chicago, where he was employed on the Chicago *Tribune* till 1885, the latter part of the time as a member of the editorial staff. His later life was devoted to writing. His publications include: *A Strike of Millionaires against Miners, the Story of Spring Valley* (1890); *Wealth against Commonwealth* (1894), a history of the growth and methods of the Standard Oil Company; *Labor Co-partnership* (1899), notes of visits to various co-operative shops and farms in Great Britain; *A Country without Strikes* (1900), an account of the history and workings of compulsory arbitration in New Zealand; and *Newest England* (1900). He made the labor question his special field of research, and was an advocate of co-operation

and a believer in socialistic—or, as he called it, democratic—control of industry, to which he maintained that social evolution was leading. He possessed the power of presenting economic facts in an unusually interesting manner, especially his *Wealth against Commonwealth,* though compiled from court records and other official documents, is written with a force and vividness which give it real literary quality.

LLOYD, JOHN URI, PH.M., PH.D., LL.D.: American chemist and author: b. West Bloomfield, N. Y., 1849, Apr. 19. He was educated in private schools; became professor of pharmacy at the Cincinnati College of Pharmacy, and held that position till 1887. He has been professor of chemistry in the Eclectic Medical Institute since 1878, and is now its president; and is associate editor of the *Pharmaceutical Review,* the *Eclectic Medical Journal,* and the *Medical Gleaner.* He has made special studies in the dialect, superstitions, and folk-lore of northern Kentucky, is a member of many societies, contributor to chemical and pharmaceutical journals, and has written: *Chemistry of Medicine* (1881); *Etidorpha, the End of the Earth* (1895); *The Right Side of the Car* (1897); *Stringtown on the Pike* (1900); *Warwick of the Knobs* (1901); *Red Head* (1903); *Scroggins* (1904); and, in collaboration, *Drugs and Medicines of North America* (1884); *King's American Dispensatory,* with King (1885-1900); *Elixirs, their History and Preparation* (1892); *A Study in Pharmacy* (1895).

LLOYD, NELSON MCALLISTER: American journalist and author: b. Philadelphia, 1873, Dec. 18. He was educated at the Germantown Academy, and graduated in electrical engineering at the Pennsylvania State College in 1892. Since then he has been engaged in newspaper work on the New York *Evening Sun,* of which he has been city editor since 1897. He has contributed many historical sketches and short stories to magazines, and has also published *The Chronic Loafer* (1900); *A Drone and a Dreamer* (1901); *The Soldier of the Valley* (1904); *Mrs. Radigan; The Robberies Co., Ltd.* (1906); *Six Stars* (1906); etc.

LLOYD'S, n. *loydz* [from *Lloyd's* Coffee-house, London, where rooms were set apart for the same purpose]: set of rooms on the first floor of the Royal Exchange, London, frequented by merchants, ship-owners, underwriters, etc., for obtaining shipping intelligence, and transacting marine insurance. One large room, with small rooms attached, is set apart for the use of the *underwriters,* and there two enormous ledgers lie constantly open, one containing a list of vessels *arrived,* the other recording disasters at sea. In the same series of rooms there is a self-registering anemometer and anemoscope for the use of the underwriters; also a valuable collection of charts for consultation (see INSURANCE,

MARINE). None but members of Lloyd's who have duly paid the fees are allowed to transact business there, either as insurance-brokers or underwriters. The shipping intelligence is furnished by agents appointed for the purpose, and there is scarcely a port of consequence where one is not stationed. The agent receives no salary, his labor being ably compensated by the advantages that he derives from the connection. The intelligence contained in the ledgers is also diffused over the country every afternoon by the publication of *Lloyd's List*. There are two other rooms—the *Reading Room*, merely an extensive news-room; and the *Captain's Room*, where auctions of ships are carried on, and where captains and merchants can meet in a sociable manner. The society of Lloyd's is managed by a committee of 12, selected from the members, who also appoint the agents and officials of the establishment. The expenses are defrayed by fees and annual subscriptions.

Lloyd's Register of British and Foreign Shipping is a volume published annually, and containing information respecting vessels, their age, materials, repairs, owners, captains, etc. This information is supplied by salaried agents at the different ports. The office of the *Register* is quite distinct from Lloyd's of the Exchange. *'Classed at Lloyd's,'* is said of a ship whose character and seaworthiness are shown by its being entered in a certain class on Lloyd's Register—the highest class being registered as A1 (see A1). See Martin's *History of Lloyd's* (1876).

LLOYD'S AUSTRIAN: association for general, commercial, and industrial purposes, founded in Trieste by Baron Bruck 1833, to supply the want experienced by the maritime insurance companies of that port, of a central administration to attend to their common interests. This association, like its London prototype, has agents in all principal foreign ports, whose duty it is to collect all information of a nature to affect the commerce and navigation of Trieste, and to keep a list of all entrances and clearances of ships at their respective ports. This information is published in the *Giornale del Lloyd Austriaco*. This company has established regular communication between Trieste and all the important seaports in the Adriatic and Levant, by means of a large fleet of steamers, which also carry the Austrian mails. The society of Austrian Lloyd's includes three sections: the first is composed of insurance companies, the second of steamboat companies, while the third or scientific department (established 1849), has issued a great number of literary and scientific journals.

LLOYD'S BONDS: obligations by companies under their seal, purporting to be for work done, or for materials supplied for the purposes of an undertaking, and covenanting to pay the debt and interest thereon. They were devised by an eminent English counsel, whose name

they bear, to enable railway companies to exceed the powers of borrowing money granted to them by parliament. The issue of these bonds was abused, being frequently made without the shareholders, or the statutory debenture holders of the company, being consulted; and the Railway Companies' Securities Act, 1866; and the Railway Companies' Act, 1867, made requisite provision against abuses. Lloyd's bonds cannot be granted for money lent; and they are valid and enforceable only when granted in *bonâ fide* to contractors and others, for work actually done, or materials supplied.

LO, int. *lō* [AS. *la*]: look; behold.

LOACH, or LOCHE, n. *lōch* [F. *loche;* Sp. *loja,* a loach], (*Cobitis*): genus of fishes of the carp family (*Cyprinidæ*), having an elongated body, covered with small scales, and invested with a thick mucous secretion; a small head, a small, toothless mouth surrounded with 4 to 10 barbules; small gill-openings, and three branchiostegal rays. They are found only in Europe and Asia. One species, the COMMON LOACH (*C. barbatula*), called in Scotland the *Beardie,* is common in rivers and brooks in Britain. It seldom exceeds four inches in length; is yellowish-white, clouded, and spotted with brown; feeds on worms and aquatic insects; and is highly esteemed for the table. It generally keeps very close to the bottom of the water.—The LAKE LOACH (*C. fossilis*) of the continent of Europe is sometimes 12 inches long, with longitudinal stripes of brown and yellow. It inhabits the mud of stagnant waters, coming to the surface only in stormy weather. The flesh is soft and has a muddy flavor.

LOAD, n. *lōd* [AS. *hlad,* a load; *hladan,* to load: Icel. *hladi,* a heap; *hlada,* a barn: comp. Gael. *lòd,* a load, a burden: see LADE 3]: a burden; a cargo; that which is borne with inconvenience, difficulty, or pain; weight; pressure; a weight, or defined quantities of different commodities or bulky merchandise. The output of, or demand upon a machine, usually measured either in terms of current delivered or of power delivered. A load may be light, heavy, normal, full, half, excessive, etc., according to the output of the machine at the time considered. V. to burden; to lay on or in for conveyance; to make heavy by something added; to charge, as a gun; to bestow or confer abundantly. LOAD'ING, imp. burdening; charging, as a gun: N. a burden; a cargo. LOAD'ED, pp., or LADEN, pp. *lā'dn:* ADJ. charged with a load or cargo; burdened or oppressed, as with a load. LOAD'ER, n. *-ėr,* one who, or that which.—SYN. of 'load, n.': freight; lading; amount; quantity; encumbrance.

Note 1.—'When we view an object already provided with a *load,* so as to fix our attention on its present condition rather than the process by which that condition was brought about, the object is *laden;* when we look

at the process of *laying on a load,* rather than its effect of leaving another object *laden,* the participle is *loaded.*' —Latham. We say 'a *loaded* gun,' but 'a *laden* ship,' and '*laden* with death,' '*laden* with sorrow.'

Note 2.—LOT, in the expressions, 'what a *lot* of money,' 'what a *lot* of people,' in the sense of 'quantity or bulk,' is probably a corruption of LOAD. There may be an etymological connection between LOAD and LOT, as there is in sense, as in 'heavy is my *lot.*'

LOADSTONE, n. *lōd'stōn* [AS. *lád;* Icel. *leid,* a way, a journey, and Eng. *stone;* Icel. *leidarstein,* a stone of the way or of conduct, a loadstone]: called also *Magnetic Iron Ore:* the magnet; mineral consisting of a mixture of peroxide of iron and protoxide of iron; occurring sometimes in grains, as *Iron Sand,* in trap rocks, sometimes in beds in primitive rocks, as in Scandinavia, where it is a valuable ore of iron. It is remarkable for its highly magnetic quality; indeed magnetism was known first as belonging to it. It is of black color; and occurs in concretions, and crystallized in octahedrons and rhomboidal dodecahedrons. LOAD'STAR, n. *-stâr* [Icel. *leidarstiarna,* a star of conduct]: the pole-star; the leading or guiding star.—*Note.* These words are properly spelled LODESTONE, LODESTAR.

LOAF, n. *lōf* [AS. *hlaf;* Goth. *hlaibs;* Ger. *laib;* Icel. *hleifr;* Fin. *laipe,* bread, loaf]: a mass or lump of baked bread; a conical mass of refined sugar. LOAVES, n. plu. *lōvz.* LOAVES AND FISHES, material interests or worldly advancement sought under the high pretense of patriotic fervor or spiritual zeal.

LOAF, v. *lōf* [Ger. *laufen,* to go to and fro, to haunt: Sp. *gallofear,* to saunter about and live upon alms: Gael. *lobh,* to rot: formerly an Americanism]: to saunter about idly and lazily; to lounge about streets and corners instead of working honestly. LOAF'ING, imp.: ADJ. wandering idly about; lounging lazily about the streets and public houses. LOAFED, pp. *lōft.* LOAF'ER, n. [Gael. *lobhar,* a leper, a rotten scoundrel]: an idle lounger; a vagrant; a lazy vagabond.

LOAM, n. *lōm* [AS. *lam;* Dut. *leem;* Ger. *leim,* clay: L. *limus,* mud, clay: comp. Gael. *lom,* bare]: soil consisting of a mixture of clay, sand, and lime, with animal and vegetable matters in intimate mixture. The clay varies from 20 to 50 per cent.; the proportion of lime is usually not more than five per cent. Loamy soils are among the best and most fertile: they are not stiff and tenacious like clay soils, and they are much more fertile than sandy soils. Even in mere *mechanical* properties, they are superior to both. The 'clay' used for bricks is often really a loam in which the proportion of true clay is large. In Italy, France, and some other countries, walls are made of loam beaten down between planks placed at the requisite width. These walls become very

solid, and last for centuries. LOAM WORK, the making of molds in loam, as distinguished from that of molding in sand. The loam used in foundries consists of a mixture of clay, sand, and horsedung, ground up with water by means of a form of mortar mill called the 'loam-mill.' When cold, the loam has sufficient consistency to be struck up to any desired outline by means of a 'loam-board.' LOAMY, a. *lōm'ĭ*, consisting of loam; partaking of the nature of loam, or like it.

LOAN, n. *lōn* [Gael. *lon*, a meadow, a pasture]: in *Scot.*, a meadow; a lane; a quiet, shady, winding path: also LOANING, n. *lōn'ĭng*.

LOAN, n. *lōn* [Icel. *lán;* Dan. *laan*, anything lent: Sw. *lana*, to lend: O.H.G. *léhan*, a thing granted: Ger. *leihen*, to lend]: anything given for temporary use; sum of money lent for a time at interest; grant of the use: V. to grant the use of for a time; to lend. LOAN'ING, imp. LOANED, pp. *lōnd*. LOAN-OFFICE, a place where small sums of money are lent at high interest to be repaid by instalments; a pawnbroking office.—A *loan* of money is an implied contract, by which B, the borrower, agrees to repay L, the lender. There are various modes by which B gives an acknowledgment for a loan, as by giving a bond or a promissory-note, or I. O. U. (q.v.). But no writing is necessary to constitute the contract, which may be proved by parole, and often is proved by the lender's oath, confirmed by circumstantial evidence or letters of the borrower. The debt must in general be sued for in six years in the United States, and in England and Ireland. In Scotland, a borrower is much more favored by various legal provisions.

LOAN ASSOCIATIONS, BUILDING. See CO-OPERATION; BUILDING AND LOAN ASSOCIATIONS.

LOANDA, ST. PAUL DE. See SÃO PAULO DE LOANDA.

LOANGO, *lō-ăng'gō:* most powerful of the small African states, on the coast, a little n. of the mouth of the Congo. The coast district is thinly wooded; inland the surface rises, but the interior is little known. Palm-oil, gum, wax, orchil, copper, and ivory are exported; cotton, coffee, bananas are abundantly raised, tillage being carefully attended to. The dense population are of small size, but skilled in many industries, especially as weavers of bast and straw. The king is a tool of the fetish ministers; the religious observances are peculiarly rigorous, superstitious, and oppressive. Loango, the chief town, is near the coast, 130 m. n. of the Congo.

LOASACEÆ, *lō-a-zā'sē-ē:* natural order of calycifloral exogens, natives of America, chiefly of its temperate and warmer parts. There are about 70 known species, herbaceous plants, hispid, with stinging hairs. They have opposite or alternate leaves, without stipules. The calyx is $\frac{4}{5}$ parted; the petals 5, or, by an additional inner row, 10. The stamens are numerous, in several rows, some-

times in bundles. The ovary is inferior, 1-celled; the fruit capsular or succulent. The genus *Loasa* sometimes receives the popular name of *Chili Nettle.*

LOATHE, v. *lōth* [AS. *lath,* hateful, evil: Icel. *leidr,* loathed, disliked: Ger. *leid,* what is offensive to the feelings: F. *laid,* ugly]: to regard with mingled hatred and disgust; to feel disgust at, as at food or drink. LOATH, a. *lōth, literally,* filled with aversion—hence, unwilling; backward; reluctant. LOATHING, imp. *lōth'ĭng:* N. disgust; nausea; aversion. LOATHED, pp. *lōthd.* LOATH'ER, n. *-ėr,* one who feels disgust. LOATH'FUL, a. *-fûl,* disgusting; exciting abhorrence. LOATH'INGLY, ad. *-lĭ.* LOATHSOME, a. *lōth'sŭm,* disgusting; hateful. LOATH'SOMELY, ad. *-lĭ.* LOATH'SOMENESS, n. *-nĕs,* the quality of exciting disgust or abhorrence.—SYN. of 'loathe': to abhor; abominate; detest; hate; nauseate.

LOAVES, n. *lōvz:* the plu. of LOAF, which see.

LOB, v. *lŏb* [Icel. *lubbaz,* to loiter about; *lubbi,* a shaggy dog with hanging ears: Dut. *loboor,* a dog or pig with hanging ears: W. *llabi,* a long lubber]: in *OE.,* to hang down slack, dangling, or drooping; to let fall in a slovenly or lazy manner; to droop: N. a heavy, clumsy, or sluggish person; a clown; a clumsy, heavy worm: see LOBWORM. LOB'BING, imp. LOBBED, pp. *lŏbd.* TO LOB ALONG, to walk lazily, as one fatigued.

LOBACHEVSKY, or LOBATCHEWSKY, NICOLAS IVANOVITCH: Russian mathematician: b. Makareif, Nyni-Novgorod, 1793; d. 1856, Feb. 24. He entered the University of Kazañ in 1807, completed his course of study in 5 years, became assistant professor of mathematics in 1814, and extraordinary professor in 1816. In 1823 he became ordinary professor and retained the chair until 1846, when he fell into disfavor. Unlike many professional men, he was a good business man and his administration of the affairs of the university was marked by many beneficial changes. He organized the force of teachers, and even studied architecture, so that when the new buildings were erected he supervised their erection, economized space and saved thousands of dollars. He wrote his Pangéometrie in 1855, giving the result of his long years of geometrical studies and presented it to the university. He was one of the first thinkers to apply a critical treatment to the Euclidean principles of geometry. He gave his first contribution to the theory of hyper-geometry in a lecture at Kazañ in 1826, but later wrote several treatises on the subject. He also wrote a treatise on Algebra (Kazañ 1834) and contributed many other articles on mathematics. His complete works were edited by Janischevsky (1870) and have been translated by several writers. His collection of geometrical writings was published in Lanzañ in 1883, the first volume containing Russian articles only, and the second and last volume containing the French and German ar-

ticles. For his geometry consult: *New Principles of Geometry with Complete Theory of Parallels,* translated by Halsted (Austin, Texas, 1897).

LOBATE. See under LOBE.

LOBAU ISLAND, *lō'bow:* in the Danube river, 6 m. below Vienna. It was captured by Napoleon I. 1809, May 19, occupied by the French Army three days afterward, made the rendezvous of the invading forces after the battle of Aspern, and was the scene of the celebrated passage of the Danube in July following.

LOBBY, n. *lŏb'bĭ* [Ger. *laube,* an arbor—from *laub,* foliage: mid. L. *lobĭă,* an open portico]: ante-chamber or gallery; a hall or passage serving as a common entrance to different apartments. THE LOBBY, in reference to legislative bodies; popular term for the group of men and women, able, or declaring themselves able, to influence legislators for or against certain measures that may be presented for vote. Members of 'the lobby' are paid in some way for their exertions; and while, doubtless, their object and methods may in some instances be entirely correct, the system usually has little use for moral scruples and has ready affinity with corruption.

LOBE, n. *lōb* [F. *lobe,* a lobe—from Gr. *lobos,* the tip of the ear: It. *lobo—lit.,* the part hanging down]: a part or division of the lungs, liver, etc.; the lower soft part of the ear; in *bot.,* a large division of a leaf, or of a seed —often applied to the divisions of the anther. LOBED, a. *lōbd,* or LOBATE, a. *lō'bāt,* having lobes or divisions. LOBULE, n. *lŏb'ūl,* a little lobe, or the subdivision of a lobe. LOB'ULAR, a. *-ū-lėr,* belonging to or affecting a lobe.

LOBELIA, n. *lō-bē'lĭ-ă* [from *Matthias Lobel,* or *de l'Obel* (1538-1616, b. Lille, France), botanist of King James I.]: extensive genus of beautiful plants, corolliflоral exogens of nat. ord. *Lobeliaceæ.* This order is nearly allied to *Campanulaceæ,* one of the most conspicuous differences being the irregular corolla. It contains almost 400 known species, natives of tropical and temperate climates, abounding chiefly in damp woods in America and n. India. They are generally herbaceous or half-shrubby, and have a milky juice, often very acrid, and often containing much caoutchouc. A poisonous character belongs to the order, and some are excessively acrid, as *Tupa Fuillei,* a Chilian and Peruvian plant, of which the very smell excites vomiting; yet the succulent fruit of one species, *Centropogon Surinamesis,* is eatable.—The WATER LOBELIA (*L. Dortmanna*) is frequent in lakes with gravelly bottom, often forming a green carpet underneath the water with its densely matted sub-cylindrical leaves. The flowers are blue, the flowering stems rising above the water.—To this genus belong many favorite garden-flowers, e.g., the beautiful CARDINAL FLOWERS (*L. cardinalis, L. fulgens,* and *L. splen-*

dens) and the BLUE CARDINAL (*L. syphilitica*), natives of warmer parts of N. America, perennials, which it is usual to protect during winter in Britain. To this genus belongs also the INDIAN TOBACCO of N. America (*L. inflata*), an annual, with an erect stem, 12 inches high or more, with blue flowers, which has been used as a medicine from time immemorial by the aborigines of N. America; both the flowering-herb and seeds are exported. It is the former, compressed in oblong cakes, which is chiefly employed. A volatile liquid alkaloid, *Lobelina* (*lō-bĕ-lī'nă*), and a peculiar acid, *Lobelic acid* (*lō-bē'lĭk*) have been obtained from it.

In small doses, lobelia acts as diaphoretic and expectorant; in full doses, as a powerful nauseating emetic; while in excessive doses, or in full doses, too often repeated, it is a powerful acro-narcotic poison. It is the favorite remedy of a special class of empirics; consequently deaths occur from its administration. Physicians seldom prescribe it now, except in asthma.

LOBENGULA, *lō-bĕng-gô'lâ:* king of the Matabeles (see MATABELELAND): b. about 1833; d. 1894. He was a son of Mosilikatse, whom he succeeded in 1870. Fixing his capital at Bulawayo (q.v.), he made himself a powerful opponent of western civilization, and prohibited his people, on pain of death, from accepting Christianity. After years of diplomatic effort, following the discovery of gold in his domains, Great Britain, by treaty in 1888, acquired suzerainty over his kingdom, and in 1890 the British South African Company obtained from him permission to settle in Mashonland (q.v.), paying him a stipulated rent. After preparing to hold the country and work the gold mines, the company provoked the enmity of Lobengula, who began against the English a war which resulted in his disastrous defeat, after shocking slaughter of his men by Maxim guns. Bulawayo was taken, and Lobengula fled. During his flight he ambuscaded and killed Maj. Wilson and a British detachment, but the contest ended with his own death.

LOBIPEDIDÆ, *lōb-ĭ-pĕd'ĭ-dē:* family of birds of ord. *Grallæ*, nearly allied to *Rallidæ* (Rails, Craiks, Gallinules, etc.), but differing in having the toes separately margined on both sides with a scalloped membrane, thus forming an interesting connecting link with the web-footed birds, or ord. *Palmipedes*. The general appearance of many of the lobipedidæ also approaches to that of the *Anatidæ*. Coots and phalaropes are examples of this family. They are all aquatic, some of them frequenting fresh, and others salt water; some often found far out at sea on banks of sea-weed.

LOBLOLLY, n. *lŏb'lŏl-lĭ* [OE. *lob*, something not having strength to support itself: V. to hang down, and Eng. *loll*]: among *seamen*, gruel or spoon-meat: see LOB. LOBLOLLY BOY, sailor's name for the man who assists the medical officers in the 'sick bay' or hospital.

LOB'LOLLY BAY. See GORDONIA.

LOBOS ISLANDS, *lō'bōs:* two small groups of rocky islands, about 12 m. off the coast of Peru, noted for their immense supply of guano. Seals abound on their shores.

LOBSTER, n. *lŏb'stėr* [AS. *lopustre;* L. *locusta,* a lobster] (*Homarus*): genus of Crustaceans, of ord. *Decapoda,* sub-ord. *Macrura* (see CRAYFISH); differing from Crayfish (*Astacus*), to which, in general form and characters, they are very similar, in having the *rostrum* in front of the carapace not depressed, but straight, and armed with many teeth on each side, and the last ring of the thorax not movable, but soldered to the preceding one. The COMMON LOBSTER of Europe (*H. vulgaris*), found in great plenty of rocky coasts of Britain, and most parts of Europe, sometimes attains such size as to weigh 12 or 14 lbs., when loaded with spawn, though a lobster of a pound weight, or even less, is deemed fit for the market. It is highly esteemed for the table, and is in best season from Oct. to the beginning of May. Its clouded and varied bluish-black color changes to a nearly uniform red in boiling. It is found in greatest abundance in clear water to no great depth, and is very active in retreating from danger, using its powerful tail-fin for swimming, or almost springing through the water, and thrusting itself into holes of the rocks which seem almost too small to admit its body. The claws are powerful weapons of defense; one is always larger than the other, and the pincers of one claw are knobbed on the inner edge, those of the other are serrated. It is more dangerous to be seized by the serrated than by the knobbed claw. Lobsters are sometimes caught by the hand, which requires dexterity; but they are more frequently taken in traps of various kinds, sometimes made of osier twigs, sometimes a kind of nets, sometimes pots, but always baited with animal garbage. The supply of lobsters in the market has of late years greatly fallen off from over-fishing. Lobsters are very voracious; they are also very pugnacious, and have frequent combats among themselves, in which limbs are often lost; but the loss is soon repaired by the growth of a new limb, rather smaller than the former one. Like crabs, they frequently change their shelly covering, and, for a short time before their moulting, are very languid and inert. Their growth takes place during the time when the shell is soft, and with extraordinary rapidity.—The AMERICAN LOBSTER (*H. americanus*) is similar, but has claws much larger in proportion.—The NORWAY LOBSTER (*Nephrops norvegicus*) is frequently taken on the British coast, and appears in the markets. The eyes are kidney-shaped, and not round, as in the common lobster. The claws have also a more slender and prismatic form, and the color is a pale flesh color. It is said by some to be the most delicate of all the crustaceans: by others, to be inferior to the common lobster.—The SPINY LOBSTER, or SEA

LOBSTER.

Crayfish (*Palinurus vulgaris*), is common on the rocky coasts of Britain, particularly in the south: it is believed to be the *Karabos* of the Greeks, and the *Locusta* of the Romans. It attains a length of about 18 inches. The shell is very hard, and the whole body is rough with short spines. The antennæ are very long. There are no claws or pincers, the first pair of feet being very similar to the others. The Spiny Lobster is brought to market, but is inferior to the common lobster.—Other species are found in other parts of the world. The toothsomeness of the American lobster was early recognized and a regular fishery has existed on the Massachusetts coast for nearly a century. Owing to a rapidly extending depletion of the fishing-grounds and a consequent diminution in the size and number of lobsters, the centre of the fishery has shifted northward, first to Maine and then to the British provinces. There were 1,078,065 pounds of spiny lobster, valued at $43,406, caught on the Pacific coast; the New England states in 1902 produced nearly 15,000,000 pounds of lobster, valued at over $1,330,000; and the middle Atlantic states in 1904 produced about 375,000 pounds, valued at $45,000. After about 1885 the yield declined steadily, but the value of the product increased. As measures toward maintaining the lobster supply, laws have been enacted fixing fines for the possession of egg-bearing lobsters or those below a specified minimum size, and recourse has been had to artificial propagation. In the latter practice many millions of eggs are annually taken from the bearing lobsters, artificially hatched, and the larvæ distributed by the fish commissions of the United States and the British provinces. The United States bureau plants upward of 80,000,000 of fry annually, and the Canadian government operates on an even more extensive scale. The beneficial results have been scarcely apparent, but the recent successful rearing of lobsters beyond the larval stages has introduced a more hopeful outlook. The methods of the lobster fishery are very simple and uniform. Use is made of a trap or pot, a box-like affair generally made of laths placed about one inch apart, and with a funnel-shaped opening of coarse netting placed in one end. The pot is baited with otherwise useless fish, weighted with stones, and lowered to the bottom by means of a rope to the upper end of which a buoy, with the owner's private mark affixed is attached. The pots are visited daily, and the lobsters, which after entering are unable to find their way out, removed. They are kept alive in floats until a sufficient number for shipment has been gathered. Besides those sold in the shells, large quantities of the meat are canned, particularly at Portland.

Consult especially the elaborate account of the American lobster by Herrick, in *Bulletin of the U. S. Fish*

Commission for 1895, in which full bibliographical references will be found.

LOBWORM, n. *lŏb'werm:* a worm, a species of dorsibranchiate annelid, of the genus *Arenicola,* ord. *Errantia;* having a large head with neither eyes nor jaws. It is found in sandy sea-beaches, and is used as bait—named from its shaggy, heavy appearance, and broad *lobe* of the one end. See LOBE and LOB.

LOCAL, a. *lō'kăl* [F. *local*—from L. *locālis,* pertaining to a place—from *locus,* a place: It. *locale,* local]: pertaining to or limited to a particular spot or place. LO'CALLY, ad. *-lĭ,* with respect to place. LOCALITY, n. *lō-kăl'ĭ-tĭ,* existence in a place; limitation to a certain district; situation. LOCALE, n. *lō-kâl'* [F. fem. *locale,* loçal]: particular place or spot where anything is done or happens. LOCALIZE, v. *lō'kăl-ĭz,* to make local; to limit to a particular place. LO'CALIZING, imp. LO'CALIZED, pp. *-īzd.* LOCALIZATION, n. *lō'kăl-ī-zā'shŭn,* the act of fixing or limiting to a particular place.

LO'CAL GOVERNMENT IN THE UNITED KINGDOM: control and administration of the local affairs of separate divisions and districts of Great Britain and Ireland, by subordinate authorities. It is thus contrasted with imperial government, or the control and administration of affairs for the whole country, by the supreme legislative and executive authority. England and Wales, together with the Scilly Isles have one form of local government; but local government in Scotland, Ireland, the Channel Isles and the Isle of Man is entirely distinct. The system in the first named will be described. The lowest unit of government is the parish, administered if small by the parish meeting open to all adults; if large by a parish council elected triennially by the householders. The meeting or council has power to provide street lights, police protection, and establish libraries, reading rooms, baths, and public laundries, but its power to levy taxes is limited. Next in order comes the rural district council, triennially elected by the householders of a group of parishes; this council deals with roads and sanitation. Places that require more varied local government owing to density of population are given the status of urban districts, the council of which combines the functions of the parish and rural district councils, but with more extended powers. Again many of these urban districts (now more than 300) are charted municipal corporations, electing their councils annually by thirds. This council is presided over by a mayor and coöpts into its own body additional members styled aldermen. Some of these urban districts have their own police force under control of their own town councils. Apart from minor technicalities there is practically no difference between an urban district that is, and one that is not, a municipal corporation. The words

'town' and 'borough' are used in England to denote any urban place, irrespective of size. Superior to all these is the county council which has charge of education and lunatic asylums, maintains the main roads, and to a certain extent supervises the minor local authorities. This council is elected triennially by the occupants of houses or lands anywhere within the county, and contributes half the members (the justices of the peace nominating the other half) to the committee that controls the county police force.

Most of the boroughs over 50,000 inhabitants and a few with less are not under the control of the county administration nor represented in the county council, but are entirely autonomous municipal corporations with the powers of county councils. The town council presided over by a mayor (or in six cases a lord mayor) is, with the exception of the administration of the Poor Law and of Justice, the sole local governing body of the city.

London is divided into 28 metropolitan boroughs, each having its council, elected triennially by the householders, which administers the lighting, cleaning and paving of streets, minor house drainage, removal of refuse, suppression of nuisances, and the collection of all municipal taxes. One of these boroughs—the ancient city—still preserves its Corporation, its lord mayor, etc., and in addition administers its estates, the central markets, some of the bridges, the special city police force, and (in part) the port of London. The London County Council, consisting of 118 members elected triennially from the whole county, together with 19 co-opted aldermen, stands above all these local bodies, and administers education, main drainage, parks, recreation grounds, the lunatic asylums, tramways, river steamboats, street improvements, the erection of new buildings, etc., and also manages the debt of London. The water supply of the entire metropolitan district is under the control of the Metropolitan Water Board, and the Thames is administered by the Thames Conservancy Board, both boards consisting of representatives of all the local authorities concerned.

The limited space will not permit any attempt to describe the administration of the Poor Law or of the Justices of the Peace, for the details of which the reader is referred to the books mentioned in the bibliography. The majority of English municipalities now maintain police forces and fire brigades; own and operate the water works, the heat, light and power plants; administer public education; and own the markets, which often include warehouse accommodation, weighing machines, and sometimes cold storage and abattoir; many provide parks and play grounds, public libraries and reading rooms, art galleries and museums, and workmen's blocks in towns and cottages in the country; and some have swimming and other baths and public laundries, with low fees.

There are many other miscellaneous public services maintained by English local authorities but they are too numerous to mention. See PARISH; SHIRE; MUNICIPALITY; BOROUGH; VESTRY; OVERSEERS; GUARDIAN; SHERIFF; CORONER; TOWN COUNCIL; etc.

Bibliography.—Redlich and Hirst, *English Local Government;* Percy Ashley, *Local Government* (1905); Sidney and Beatrice Webb, *The Parish and the County* (1906); William Blake Odgers, *Local Government* (2d ed. 1906); W. L. M. Lee, *History of Police in England* (1902); Maitland, *Justice and Police;* W. Thompson, *The Housing Handbook* (1904); L. Darwin, *Municipal Trade* (1903); G. B. Shaw, *The Common Sense of Municipal Trading* (1904); R. B. Suthers, *Mind Your Own Business* (1905); *The Municipal Year Book.*

LO'CAL GOVERNMENT IN THE UNITED STATES. See STATE; COUNTY; CITY; TOWN; TOWNSHIP; WARD; MUNICIPALITY; CITY GOVERNMENT; MUNICIPAL GOVERNMENT; CIVIL SERVICE; PUBLIC CHARITIES; TENEMENT HOUSE; WATER SUPPLY; etc.

LO'CAL OP'TION, as to Sale of Liquor: term denoting the power which temperance reformers have of late sought to secure for the voters in any local community to regulate the liquor traffic within their bounds as to a certain majority of them shall seem best, either by maintaining unchanged, increasing, diminishing, or wholly prohibiting and suppressing the sale of intoxicating liquors. These powers might be exercised periodically, either through general suffrage, or through a board of representatives elected for the purpose. This mode of dealing with the liquor traffic accords with the principles of 'home government,' establishes restriction only in communities which are sufficiently interested in restrictive laws to see to their enforcement, and allows such communities to proceed with such measures of reform as they may see applicable under their circumstances without awaiting the slower movement of some large area like a state. Local option for counties also is widely advocated. Some reformers, however, protest that local option is liable to be inefficient for good; as adjoining towns or counties may fail to restrict the traffic and may furnish supplies which will nullify the restriction where adopted. See LICENSE.

LOCAL SCHOOL SYSTEMS. See EDUCATION IN THE UNITED STATES.

LOCAL SIGN: the peculiar quality of a sensation, indicating its place of origin, that causes it to differ from other similar sensations arising at other sensible points on the body. For example, a sensation from the finger is recognized as being from no other part of the body; the finger may be cold, or warm, or painful, but still the finger sensation is never mistaken for a tongue sensation, or a leg sensation.

LOCAR'NO. See LAGO MAGGIORE.

LOCATE, v. *lō'kāt* [L. *locātus*, set or disposed—from *locus*, a place]: to set in a particular place or position; in *U. S.*, to select or survey for settlement. LO'CATING, imp. LO'CATED, pp. LOCATION, n. *lō-kā'shŭn*, situation with respect to place; that which is located; state of being placed; a colonial name for surveyed land; a settlement. LOCATIVE, a. *lŏk'ă-tĭv*, in *gram.*, applied to the case expressive of locality, or at a place—existing originally in all the Aryan languages.

LOCH, n. *lŏch* [Gael. *loch*, an arm of the sea: Icel. *lögr;* W. *llwch*, a lake]: in *Scot.*, a lake; a bay; an inlet or arm of the sea. *Note.*—The *ch* in Scotch is gutteral.

LOCHABER-AX, n. *lŏch-âb'ėr-ăks* [from *Lochaber*, a district of Scotland]: formidable battle-axe, formerly used by the Highlanders of Scotland, consisting of a short pole, usually curved, with a sharp broad blade like an ax at one end.

LOCHIA, n. *lō-kī'ă* [Gr. *locheia*, child-birth]: in *med.*, the discharge that flows from the uterus and vagina after child-birth while the mucous membrane is returning to its former condition. LOCHIAL, a. *lō'kĭ-ăl*, pertaining to or connected with the lochia.

LOCK, n. *lŏk* [Icel. *loka*, a bolt; *lok*, a cover, a shutter, a latch: Goth. *lukan;* Dut. *loken*, to shut, to close: AS. *loc*, a place shut in]: apparatus for fastening doors, etc., by means of a key: the part of a gun or rifle by which it is discharged: the part of a canal confined by gates: any narrow confined place or inclosure; a grapple in wrestling: V. to fasten with a lock; to shut up or confine; to close fast; to embrace closely; to become fast. LOCK'ING, imp. LOCKED, pp. *lŏkt:* ADJ. made fast; furnished with a lock; closely embraced. LOCKAGE, n. *lŏk'āj*, the materials for locks; the whole system of locks on a canal; a toll paid for passing through. LOCKFAST, *-făst*, made close and secure by a lock. LOCK-JAW, or LOCKED-JAW, n. *lŏkt-*, rigidity or stiffness of the lower jaw, which adheres so firmly to the upper that it cannot be separated (see TETANUS). LOCKSMITH, one who constructs locks or repairs them. LOCK-UP, a temporary prison. LOCK-UP HOUSES, houses of bailiffs of the sheriff (in Britain) to which debtors arrested for debt were taken first until it was seen whether they would settle their debt without being taken to the ordinary jail. (See EXECUTION; IMPRISONMENT.) LOCK-UP SAFETY VALVE, a safety valve the spring of which is enclosed in a padlocked casing. DEAD-LOCK, a complication or counteraction of things producing an entire stoppage. LOCK-HOSPITAL, *lŏk-hŏs'pĭ-tăl* [Dut. *loken;* Icel. *lúka*, to shut, to fasten; AS. *loc*, a place shut in: F. *loquet*, the latch of a door]: a hospital inclosed or separated from other buildings; an institution for the treat-

ment of venereal diseases. LOCK-OUT, the condition of things when a master refuses further employment to his men until the settlement of a trade dispute—*locking* the doors of his works against their entrance.

LOCK, n. *lŏk* [Dut. *locke,* a lock or flock of wool: Icel. *lokkr;* Dan. *lok,* a lock of hair]: a tuft of hair; a small bunch or tuft of wool; ringlets or straggling tufts of hair around the forehead.

LOCK: contrivance for securely fastening the door of a building, the lid of a box, etc. More broadly speaking, a lock is a *bolt* guarded by an *obstacle,* and controlled by a *key.* The *bolt* may be pivoted or rotary, but usually slides; the *key* generally rotates, but may act by sliding or pushing; the *obstacle,* which in order to operate the bolt must be overcome by the key, may be of the *warded* (fixed) or of the *tumbler* (movable) types. Among the early Egyptians, Greeks, and Romans, locks were used, but their construction evinced little skill, and they were usually made of hard-wood; in fact, they were little more than wooden bolts, requiring only the hand to unfasten them. The first improvement was a remarkable one, invented by the ancient Egyptians; it contained the principles of the modern tumbler-lock; but though still in use among the Egyptians and Turks, it has never, in their hands, made any advance. The lock consists of a case, fig. 1, A, which is nailed to the door; through the case passes a large wooden bolt, fig. 1, B, the end of which, E, enters the staple, while the opposite end is left exposed. In the lower part of the bolt B, is a square groove C, which has certain round or square holes, as seen in fig. 2, *f,* which gives the open view of the lock. When the bolt is pushed home into the staple, these holes come exactly under corresponding little cavities in the case *e,* fig. 2, in each of which is placed an upright wooden pin, with a knob, which prevents its falling too low; these little pins consequently fall into the holes in the bolt when it is pushed far enough, and the door is locked. In order to unlock it, the bar of wood, fig. 3, is passed into the groove C, in the bolt, and on the bar there are the same number of pins of wood placed upright as there are holes in the bolt, and loose pins in the chambers of the case; and

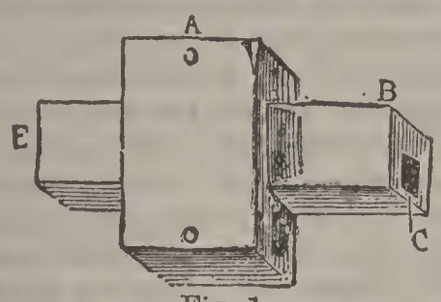


Fig. 1.

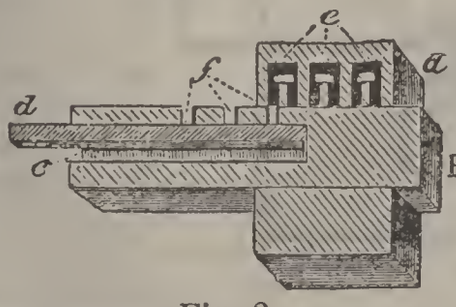


Fig. 2.

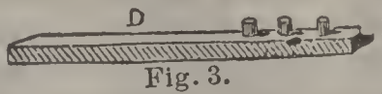


Fig. 3.

these upright pins are placed so as to correspond exactly in size and position to the holes; therefore, when the pins reach the holes, they slip into them, and push up the loose pins into their respective cavities, and the bolt is then easily pulled back by means of the bar or key. This is simple and ingenious, but it is very clumsy, and, as usually made in Turkey, is not secure. Nevertheless, it has been in use longer than any other form of lock in existence.

During the middle ages, very complicated and ingenious locks of various kinds were made, and as much artistic taste was expended upon the ornamentation of their external metal-work as there was skill in the interior mechanism. Such locks, however, were not adapted to general use, and were found only on the caskets of the wealthy. The ordinary ward and spring locks were the only ones commonly employed till the beginning of the present century, even for important purposes, and this kind of lock is still in very common use. It consists of a bolt of metal, to which a spring is attached, and it is moved forward or backward by means of a key, which, by raising the bolt, compresses the spring in the slot, through which it works, and so lets it pass on till out of the range of the key's action, which, turning on a pivot, is regulated by the length of its wards, and the depth of a curve cut in the under side of the bolt. In order to prevent any key of the same size opening all such locks, little ridges of iron are placed in circles or parts of circles, and wards are cut in the keys, so as to correspond with them; hence, only the key which has openings or wards which will allow the ridges to pass through them, can be used. In fig. 4, A is the bolt,

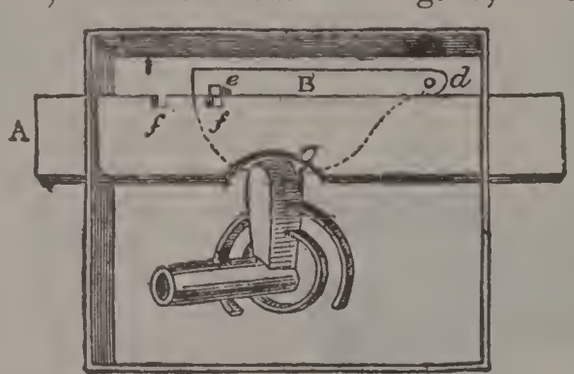


Fig. 4.

having at the end opposite to that which enters the staple a small piece slit, bent outward, and tempered hard; this forms the spring *a;* below, are two notches *b, b,* divided by a curved piece of the bolt *c;* there is another notch *d,* which, if the key enters, and is turned round, it draws the bolt forward or backward in locking or unlocking, and the spring makes the end of the bolt either drop into one of the notches *b, b,* or rise up the curve *c,* according to the distance to which it is pulled. The ridges B, B, are so placed as to allow the wards of

the key, C, to move freely, and to prevent the entrance of another key with different wards.

The *tumbler-lock* is the type of another class, and is an advance upon the last; the two principles are, however, in most cases combined. In fig. 5 a lock nearly like the

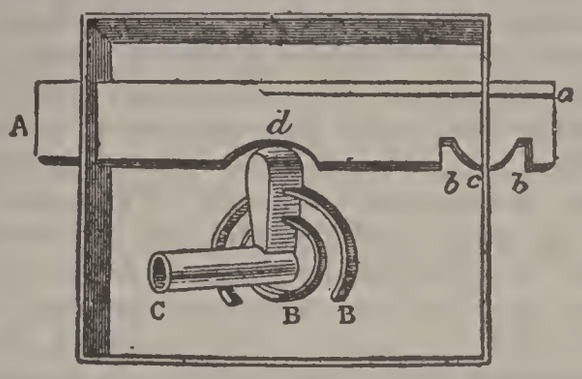


Fig. 5.

former has been chosen, and the simplest form of *tumbler* added. It will be seen that the bolt, A, has neither the spring-piece nor the notches and curves on the under side, as in fig. 4; but it has two notches on the upper side, which are exactly as far apart as the distance moved by the bolt in locking or unlocking. Behind the bolt, partly seen only—the covered parts being indicated by dotted lines—is the *tumbler* B, a small plate moving on the pivot *d*, and having projecting from its face a small square pin *e*, which, when the bolt is locked or unlocked, falls exactly into one or the other of the small notches *f*, *f*. There is in the key a notch *g*, which corresponds to the outline of the tumbler, as indicated by the dotted lines. This acts upon the tumbler when the key is turned, and raises it so as to lift the pin out of the notch in the bolt, and allow the latter to be moved freely forward until the other notch comes under the pin, when the latter falls into and immediately stops its further progress, and the action of the key must be reversed in order to relieve it again. This very simple application of the tumbler is sufficient to explain the principle which may be, and is varied to an almost endless extent. Chubb's, among English locks, carries it out most fully, the bolt itself being only a series of tumblers, with a notch on the key for each. Bramah's lock, patented 1788, has had immense reputation, chiefly for cabinets, desks, and other similar applications; it is very different in principle from those before mentioned, consisting of a number of movable slides or interior bolts working in an internal cylinder of the lock, and regulated by the pressure upward or downward of the key acting on a spiral spring. For ordinary purposes, it is very secure; but when the utmost security is required, the beautiful lock invented by Cotterill of Birmingham, and the still more ingenious ones of Hobbs and Yale (both Americans), must be preferred.

Classification of Locks.—The character of a lock is

largely determined by the obstacle (the obstruction to be overcome by the key in order to operate the bolt), and the obstacle influences the form of the key to a great extent. The most commonly used keys are as follows: the *round* key, with wing bit and solid cylindrical shank and stem; the *barrel* key, a hollow round key with a tubular end, the hole fitting over a guide pin in the lock; the *flat* key, used (in combination with a revolving centre or disc) with both the warded and lever-tumbler types of locks, and the *cylinder lock* key, used in the Yale system of pin-tumbler locks. The most commonly used locks are the *warded* lock, the *lever-tumbler* lock, the *cylinder* or *pin-tumbler* lock and the *padlock* for ordinary use, the *time-lock* for bank use, and the *dial* or *combination* lock for safes. For general purposes the builder designates locks in the following manner:

Front Door Locks and *Vestibule Latches;* for entrance doors.

Two-Bolt Knob Locks; for room, communicating, and closet doors.

Three-Bolt Knob; for bedroom and bath-room doors.

Sliding Door Locks; for all kinds of sliding doors.

Knob Latches; where a knob action only is required.

Dead Locks; where a key action only is required.

Night Latches; where a spring lock, with key is required.

Hotel Locks; for bedroom doors, in series controlled by a master-key.

Office Locks; for office doors, in series controlled by a master-key.

Store Door Locks; for the entrance doors of stores, etc.

Warded Locks.—In the majority of this class there is a 'back spring' or dog, the feeling of which, when using the key, resembles that of a tumbler, but which adds nothing to the security. This construction is used mainly in the cheaper grades of locks. Round, barrel, and flat keys are used with warded locks.

Lever-Tumbler Locks.—These locks may contain several tumblers, the more there are the greater degree of security, the number of key changes usually being limited to from 12 to 24 and possibly 72, while in a good three-tumbler lock of this style as many as from 200 to 500 key-changes are possible. Round, barrel, and flat keys are all used in this style.

Cylinder and 'Pin-Tumbler' Locks.—The former term applies to locks in which the pin tumbler is contained in a cylinder separate from the lock case; the latter is applied to those wherein the pin tumblers are contained in the lock itself; but all cylinder locks are not necessarily of the pin-tumbler type.

Master-Keyed Locks.—A series of locks is said to be 'master-keyed' when so constructed that each lock can be operated by its own key, which fits no other lock of the

series, and also by another key which will operate every lock in the entire series. Warded locks are master-keyed by means of a 'skeleton' key, with the bit cut away sufficiently to avoid all the wards in all of the locks of the series. Lever-tumbler locks are master-keyed in three ways, either by providing two 'gatings' on each tumbler, one of which is brought in line with the corresponding 'fence' or post on the bolt by the change-key and the other by the master-key; by providing a 'lifter,' which, when actuated by the master-key, moves the tumblers in the same manner as does the change-key when the latter acts directly on the tumblers; or by providing a set of secondary levers, which, when operated by the master-key, move the primary tumblers in the same manner as the change-key which acts on them directly. Pin-tumbler locks are master-keyed by cutting each pin in two places, or by encircling the plug (which contains the key-way) with a larger annular plug, thus providing two points at which each tumbler may be set to permit the plug to rotate, and utilizing one set of these points for the change-key and the other set for the master-key. A series of master-keyed locks may be sub-master-keyed by dividing it into subordinate groups, each of which is controlled by a sub-master-key of its own.

Time or Chronometer Locks.—In these the mechanism is actuated by clock-work, and is used, in connection with the heavy bolt work of a safe door, to prevent the unlocking of the latter except upon the hour at which the clock is set. There are generally three chronometer movements, each of which will of itself actuate the lock, so that should one or two be disabled or inoperative, the other will open the door at the time indicated. In connection with the time lock an automatic bolt operating device is often used. This is a mechanism attached to the inside of a safe door, containing heavy springs which are set or compressed while the door is open, and which, when released by the action of the time lock, automatically retract the bolt work of the door.

Dial or Combination Locks.—These consist essentially of a bolting mechanism guarded by a set of changeable tumblers or wheels, and actuated by a spindle passing through the door, provided on the outer end with a graduated dial, by rotating which in a certain manner the tumblers can be set and the lock be operated. These are, or should be, absolutely unpickable and are generally made in two grades, designed respectively for burglar-proof and fire-proof safes.

Safe Deposit and Sub-Treasury Locks.—The former are intended for individual safes or boxes rented by the safe deposit companies, while the latter are for use on the small inside safety chests within a fire-proof safe. The safe deposit lock is generally provided with a guard key, common to all the locks in the series, each lock also having an individual key, which fits only its own lock

and differs from every other key in the series, the latter being known as the change key. The guard mechanism must be unlocked by the guard-key before the change-key can be inserted or used in its lock.

Padlocks.—The padlock, in which the lock is a separate arrangement, is precisely similar to other locks except in shape. They have a movable bow which is hooked into a staple or other fastening and then locked. The padlock can be master-keyed when desired, but great care must be exercised that the security be unimpaired.

Keys.—There are numerous varieties of keys, of diverse sizes and forms, but they may all be classified into a few types. The commonest type is the *round cast key*, constructed of cast iron, malleable iron, bronze, or brass, the last named being the most serviceable. The *round steel key*, constructed of several pieces, was once popular but has now given place to the *solid steel key*, which is made of a single piece of wrought steel, usually cold-forged. The *barrel key* is a round key with a hole in the end to fit over a pin in the lock, but this type can only be employed when the lock has a key-hole on but one side, or if on both sides, not opposite. The *cylinder lock key* is made of nickel bronze, and usually has a gold plated trefoil bow. The *flat steel key* requires a revolving centre, or hub, in the lock to guide and support the key, and may be single or double bitted. There is also a key having a round stem and flat bow and bits.

LOCK, on a River or Canal: arrangement of two parallel floodgates, by which communication is secured between two reaches of different levels. The date of introduction of this contrivance is not known within a hundred years, nor is it clear whether it was employed first in Holland or Italy. This, however, can be affirmed with certainty, that at the beginning of the 17th century, locks existed in both countries, and it is probable that they were arrived at gradually by successive improvements in the mode of rendering shallow rivers navigable. Obviously, the first step would have been to dam the stream across at intervals, leaving gates in the dams for the passage of vessels. This measure would have divided the river into reaches or steps, each, as the source was approached, being higher above the sea than the one last passed. But the passage up or down—and especially up—such a stream must be extremely slow, as at each dam a vessel must wait until the gate has been opened, and the level equalized in the reach it is in, and that on which it is proposed to enter. Where the reaches were far apart, a large body of water would require to be raised or lowered, and the process would be tedious. The mediæval engineers next tried to place the dams as near together as possible, but expense limited this. The course then was to build two dams, with floodgates, just far enough apart to allow a vessel to float within. Under this arrangement, only the section between the dams

had to be raised or lowered. The cost of thus doubly damming a wide river, however, was very great, and it was an easy transition in thought to remove the passage from the main stream altogether, and construct a *lock* with double gates, which should open at one end above, and at the other below the dam or weir. The economy of money in building, and of time and water in working, was obvious; and on this principle all locks are now made, wherever there is traffic of any importance. The arrangement consists of two pairs of gates, opening up the stream, and offering, when shut, a salient angle to the stream or upper pressure. The effect is that the weight above only tends to close the gates still tighter. When a vessel is to be brought from one level to the other, it is floated into the 'pound,' as the space between the upper and lower gates is called. The gates are then shut, and a sluice in the lower part of the upper gate raises the surface of the pound, or the sluice in the lower gate depresses it, in a few minutes to the level of the upper or lower reach, as the case may be. These sluices are worked by racks in the gates, and the ponderous gates themselves are moved with the aid of long and heavy levers. One pair of gates must always be shut, or the two reaches would speedily assimilate their levels.

In canals where water is scarce, a reservoir, equal in size to the lock, is formed at its side. When the pound is to be emptied, the water is run into the reservoir until it and the lock are at the same level, which will be half height. The reservoir is then closed, and the remaining water in the lock runs off through the lower sluices in the usual way. On refilling the lock before opening the upper sluices, one-quarter the quantity required can be obtained from the reservoir, thus effecting a saving of many tons of water at each filling.

On rivers, advantage is taken of islands for the formation of Weirs (q.v.) and locks. On canals, to economize superintendence, the locks are usually constructed in 'ladders' of several close together, like a flight of steps. As the pressure on lock-gates is very great, and varies with the height of water above, the rise in one lock is rarely more than 8 or 9 ft. though in some instances 12 ft. have been accomplished, and in a very few cases even more. The pressure of transportation in some of the larger canals has rendered the time element of more importance than in former years, and has necessitated a more rapid means of transfer from one level to another. The contrivances to overcome delay include inclined planes, up which the boat is hauled; cylindrical tanks in which the boat can be rolled up hill; pneumatic lifts; hydraulic lifts; screw lifts and modifications of each of these methods. While all forms of locks are termed hydraulic, in the sense that the burthen is sustained in raising or lowering by the flotative power of the water, the last few years have seen perfected what

is known as the 'Hydraulic Lift Lock,' and which in principle is that both the barge or boat, the water in which it floats, the tank or chamber containing the water are all raised or lowered by means of one or more powerful hydraulic rams, operating vertically. The first canal-lock lift on record is said to have been invented in 1481, by two brothers, Dionisio and Pietro Domenico of Viterbo, Italy. Their invention was put into use during that year on the Pievega, a canal running from Pagua to Stra. About 15 years later the plan of these two brothers was copied by Lonarto da Vinci. He constructed 6 locks similarly operated on the Milan Canal in 1497. The use of locks then became general in Italy and, subsequently, throughout Europe, but nearly four centuries elapsed before any serious effort was made to improve canal facilities in matters of speed and capacity for sea-going ships and other vessels carrying heavy freightage. Referring to mechanically operated lift-locks of the hydraulic ram type, of which the example at Peterborough, Ont., Canada, is the first constructed and brought into use on the American continent, it is the outcome of many evolutionary processes. The first of these ingenious contrivances was built at Anderton, England, connecting the river Weaver with a series of local canals. It lifts about 50 feet, but its barge capacity is limited, the chambers being only 70 ft. long and 14 ft. wide.

The second lift was built at Les Fontinettes, France. It, too, was of very moderate dimensions. The third lift built, according to the records, was at La Louviere, Belgium, with guide towers, of the truss girder pattern. Each of these lift-locks has been operated with fair success. It has been demonstrated from their use that the principle on which they were constructed is correct. Many defects were brought to light, however, after their completion. These defects have now been overcome.

In the construction of the Peterborough lock four things were aimed at. (1) To overcome the elevation; (2) to reduce the time for lock operation; (3) to furnish ample capacity for a maximum number of lockages, thus preventing a congestion of traffic; (4) to provide for future increased traffic. If locks of the ordinary type had been used, five of them would have been necessary, and it is probable that five pairs of locks would have been required to reduce the periods of delay. With locks in single series (one above the other), every barge must wait until the barge preceding has passed through the whole series. The principle applied is very simple in its details. Two tanks are placed side by side and supported on plungers working in hydraulic cylinders. The two cylinders are connected by a pipe so that water can flow from one to the other, and when one plunger with its tanks is at the top of its stroke, the other is at the bottom, the two tanks balancing each other, with the

exception of the surcharge of water in the descending tank, and which surcharge forms the propelling power to raise or elevate the other tank. The movement of the lock proper is based on hydraulics and hydrostatic principles. If a cube of iron, say four inches square each way, be dropped into a pail quite filled with water, the iron will sink and displace exactly as much water as will be equivalent to the metal's bulk. If the iron be hammered or spun into some form of vessel or dish that will float, the iron in its new form would displace water exactly equivalent to its weight. Anything that sinks displaces its bulk of water. And anything that floats displaces its weight of water. This is practically illustrated in the filling of the chambers with water or with boat and water. If one chamber be filled with water to the depth of eight feet and in the other chamber be placed a barge and water to the same depth, the load in both chambers will be exactly the same. Lockages may therefore be effected with one barge or boat in a chamber, with barges in each chamber, or with the chambers containing water only. At the bottom of each well, to receive the base of the cylinder is placed a foundation of large blocks of Stanstead granite, in three courses, two of 30 and one of 40 inches in thickness. The wells are lined with concrete, making the walls practically smooth and watertight.

Much labor was involved in preparing for a proper foundation for this lift-lock. More than 120,000 cubic yards of earth was removed. The excavation was completed in 1899. The entire task of building the lock and erecting the steel superstructure occupied seven years. Some interesting details have been made available regarding this work. The substructure of the lock represents the largest monolithic mass of concrete in the world, over 26,000 barrels of cement being used in making the concrete. The breast wall of the lock is 40 ft. thick, 80 ft. high and 126 ft. long at the base. The dimensions of the chambers, which are built of steel plates, give a space in each of the two chambers of 140 ft. in length, 33 ft. in width and a depth of 9 ft. 10 in. The guide towers rise 100 ft. from the foundation. The base of the tower measures 26 ft. 6 in. by 40 ft. 8 in. The depth of water in each chamber is 82 ft., weighing, approximately, 1,300 tons. There is a pressure in the presses, during operation, of 600 pounds to the sq.in. The external diameter of the cylinders is 8 ft. 3½ in., the diameter of the ram being 7 ft. 6 in., with a working stroke of 65 ft. The presses are the largest thus far constructed. The work of excavation occupied four years. This was followed by the concrete work, which took a considerable time to perfect before the erection of the steel superstructure, which was erected in 1902-3. The lock proper is automatic. The gates and capstans are worked by hydraulic power. The actual time of lockage is 12 minutes and of vertical motion 1½ minutes.

LOCKE, *lŏk,* David Ross: popularly known by his signature, Petroleum V. Nasby: 1833, Sep. 20—1888, Feb. 15: b. Vestal, N. Y.: journalist. He received a common-school education; learned the printer's trade in the office of the Cortland *Democrat;* travelled extensively through the west and south, and worked at his trade when he needed money: and 1852-61 was successively editor and publisher of the Plymouth *Advertiser,* Mansfield *Herald,* Bucyrus *Journal,* Bellefontaine *Republican,* and Findlay *Jeffersonian,* all in Ohio. While editing the latter paper, he published a satirical letter over the signature of the Rev. Petroleum Vesuvius Nasby, dated 'Wingert's Corners, O., Mar. 21, 1861,' describing a meeting at which the Corners decided to secede from the state, and giving the reasons for the act. This letter was widely copied in the northern newspapers, and its popularity induced Locke to undertake a series of letters, which he dated from 'Confederit X Roads,' and published till after the close of the civil war. Soon after starting the letters, Locke became editor and proprietor of the Toledo *Blade,* and the future 'Nasby' letters appeared in that paper. After the war he published numerous political, social, and literary pamphlets, and became a popular lecturer. Besides his 'Nasby' letters his chief publications are: *Divers Views, Opinions, and Prophecies of Yours Truly* (Cincinnati 1865); *Swingin' Round the Cirkle* (Boston 1866); *Ekkoes from Kentucky* (1867); *The Moral History of America's Life Struggle* (1872); *The Struggles of P. V. Nasby* (1873); *The Morals of Abou ben Adhem; or, Eastern Fruit in Western Dishes* (1875); *A Paper City* (1878); *Hannah Jane,* poem, and *Nasby in Exile* (1882).

LOCKE, John: 1632, Aug. 29—1704, Oct. 28; b. Wrington, near Bristol, England. His father was steward to Col. Popham, and served under him as capt. in the Parliamentary army during the civil war. Locke was sent to Westminster School, till 1651, when he was elected a student of Christ-Church, Oxford. There he went through the usual studies, but seemed to prefer Bacon and Descartes to Aristotle. His tendency was toward experimental philosophy, and he studied especially chemistry and meteorology. In 1664, he went to Berlin, as secretary to the British envoy, but soon returned to his studies at Oxford. In 1666, he made the acquaintance of Lord Ashley, afterward Earl of Shaftesbury, and on his invitation went to live at his house. In 1672, when Shaftesbury became lord chancellor, Locke was appointed secretary of presentations, a post which he afterward exchanged for that of secretary to the Board of Trade. He was employed to draw up a constitution for the American province of Carolina, but his articles on religion were deemed too liberal, and the clergy procured insertion of a clause giving the favor of the state exclusively to the established church. In 1675 he took up

his residence at Montpellier for the benefit of his health. He had all his life an asthmatic tendency, which at that time threatened to pass into consumption. At Montpellier, he formed the acquaintance of the Earl of Pembroke, to whom his *Essay* is dedicated. In 1679, he rejoined the Earl of Shaftesbury in England; but 1682 the earl fled to Holland, to avoid prosecution for high treason. Locke bore him company, and so far shared with him the hostility of the government of James as to have his name erased, by royal mandate, from the list of students of Christ-Church. Even in Holland, he was demanded of the States-general by the English envoy; but he contrived to conceal himself till the English court ceased to trouble itself on his account. In 1687, his *Essay on the Understanding,* begun 17 years before, was finished; and an abridgment of it was published in French (1688), by his friend Le Clerc, in his *Bibliothèques,* in which Locke had published two years before his *Method of a Commonplace Book.* In 1689 appeared (also in Holland) his first letter on *Toleration.* But in 1688, the year of the Revolution, he came back to England in the fleet that conveyed the Princess of Orange. He soon obtained from the new government the situation of commissioner of appeals, worth £200 a year. He took lively interest in the cause of toleration, and in maintaining the principles of the Revolution. In 1690, his *Essay on the Understanding* was published, and met rapid and extensive celebrity; also a second letter on *Toleration,* and his well-known *Treatises on Government.* In 1691, he was engaged on the momentous question of the restoration of the coinage, and published various tracts on the subject. In 1692, he brought out a third letter on *Toleration,* which, as well as the second, was a reply to the attacks made on the first. In 1693 was published his work on *Education.* In 1695, King William appointed him a commissioner of trade and plantations. In the same year he published his treatise on *The Reasonableness of Christianity,* written to promote William's favorite scheme of a comprehension of all the Christian sects in one national church. He maintained a controversy in defense of this book; he had another controversy in defense of the *Essay on the Understanding,* against Stillingfleet, Bishop of Worcester. His feeble health now compelled him to resign his office of commissioner of plantations, and to quit London; and he spent the remainder of his life at Oates, in Essex, at the seat of Sir Francis Masham. His last years were much occupied with the study of the Scriptures, on which he wrote several dissertations, which, with his little work, *On the Conduct of the Understanding,* were published after his death. Locke was reared under strict Puritan influences, from which in early manhood he experienced a reaction —not however from the Puritan morality, but from the narrowness and intenseness which were the natural char-

acteristics of a reform which dealt with frightful abuses in an age when all classes of religionists deemed intolerance a duty. The Independents, who ruled Oxford when he was there as a student, did indeed—unlike the Presbyterian party—lead in promulgating the principles of true religious liberty. But the Independents in that time of storm developed a fanatical tendency which prepared a calm thinker like Locke to feel the attraction of the liberal divines who were one of the parties in the Church of England.

Great as were Locke's services to his country, and to the cause of civil and religious liberty, his fame rests on the *Essay on the Understanding,* which marks an epoch in the history of philosophy. More justly perhaps than any other one man, he may be regarded as the founder of modern empiricism. His purpose was to inquire into the powers of the human understanding, with a view to find out what things it was fitted to grapple with, and where it must fail, so as to make the mind of man 'more cautious in meddling with things exceeding its comprehension, and disposed to stop it when it is at the utmost extent of its tether.' This purpose led him to a thorough investigation of the constitution of the human mind, resulting in the numerous important contributions to the knowledge of his subject. He institutes a preliminary inquiry, in the subject of the First Book, as to the existence of innate ideas, theoretical and practical, on which the philosophical world has been so much divided. (See COMMON SENSE). Locke argues against the existence of these supposed innate conceptions, or intuitions, of the mind with a force and cogency that appear irresistible. Having thus repudiated (as has often been supposed) the instinctive *sources* of our knowledge or ideas, but rather (as should be said) the merely instinctive character of their substance as fully developed, he is bound to show how we gain knowledge or ideas in the course of our experience. Our experience being twofold, external and internal, we have two classes of ideas—those of Sensation, and those of Reflection. He has therefore to trace all the recognized conceptions of the mind to one or other of these so-called sources. Many of our notions are obviously derived from Experience, as colors, sounds, etc.; but some have been disputed, especially such as Space, Time, Infinity, Power, Substance, Cause, mere Good and Evil; and Locke discusses these at length, by way of tracing them to the same origin. This is the subject of Book Second, entitled 'Of Ideas.' Later controversies, which Locke could not have foreseen, have pressed his theory to such an extreme development that a materialistic system of the universe seemed to be involved. This has called forth a more searching criticism of Locke's position on this subject of the origin of our ideas, and has cast light on the unwarrantable identification of the developed substance of our ideas

with the origin of the ideas. Book Third is on language considered as an instrument of truth, and contains much valuable material. The Fourth Book is on the nature, limits, and reality of our knowledge, including the nature of demonstrative truth, the existence of a God, the provinces of faith and reason, and the nature of error.

LOCKE, WILLIAM JOHN: English novelist: b. 1863, March 20. He was educated at Queen's Royal College, Trinidad, and Cambridge University, and is secretary of the Royal Institute of British Architects. His fictions include *At the Gate of Samaria* (1895); *The Demagogue and Lady Phayre* (1896); *A Study in Shadows* (1890); *Derelicts* (1897); *Idols* (1898); *The White Dove* (1900); *The Usurper.* These have been reissued in the United States. He has also written two plays, *Mr. Cynic,* played in 1899, and *The Lost Region* (1900).

LOCKER, n. *lŏk'ėr* [Dut. *loker,* a case or cover—from *loken,* to shut: Sw. *lock,* a cover: see LOCK 1]: a receptacle with a movable top, forming a seat; a shut receptacle along the side of a ship; a drawer or cupboard which may be closed by a lock; a custom-house officer of the water-side. DAVY JONES'S LOCKER, among *sailors,* a familiar nickname for the bottom of the sea. NOT A SHOT IN THE LOCKER, among *sailors,* a familiar phrase for being without money.

LOCKET, n. *lŏk'ĕt* [F. *loquet,* the latch of a door: dim. of LOCK 2]: a little case, usually of gold or silver, attached to a necklace or guard, containing hair, a miniature, or other memento.

LOCKHART, *lŏk'ėrt,* JOHN GIBSON: 1794-1854, Nov. 25; b. Cambusnethan, Scotland; son of a minister of the Established Church of Scotland. Lockhart studied at Glasgow, and then at Oxford, where, 1813, he took first-class honors. In 1816, he became an advocate at the Scotch bar. He appears, however, to have lacked the qualifications necessary for success in this profession; besides, the bent of his mind was toward literature. He and Wilson were long the chief supporters of *Blackwood's Magazine,* the organ of the Scotch tories. Here he began to exhibit that sharp and bitter wit that was his most salient characteristic, and made him the terror of his enemies. Upon the whig writers of the *Edinburgh Review,* Lockhart poured a fire of wit and ridicule. This editorial connection led to his acquaintance with Sir Walter Scott. In 1819, appeared *Peter's Letters to his Kinsfolk.* In 1820, he married Miss Scott, eldest daughter of Sir Walter. In 1821, he published *Valerius,* and 1822 *Adam Blair.* Both, especially the latter, show him to have possessed, at least, a thorough acquaintance with the rules of art in fiction-writing. In 1823 appeared *Reginald Dalton,* a tale of English university life, and 1824 *Ancient Spanish Ballads*—perhaps the most popular of all his writings. In the same year he published his

last novel, *History of Matthew Wald.* 1826-53, he edited the *Quarterly Review.* 1837-39, appeared *Life of Scott,* a work of undoubted merit, but which has given rise to much bitter controversy. In 1837, his wife died. Previously his eldest son Hugh had died. His second son died at a later period. In 1843, Lockhart was appointed auditor of the Duchy of Cornwall, with a salary of £600 a year. In 1847, his only remaining child, a daughter, sole surviving descendant of Sir Water Scott, married J. R. Hope: she died 1858 leaving an only daughter, who inherited the estate of Abbotsford.

LOCK HA'VEN: city, cap. of Clinton co., Penn.: on the W. Branch of the Susquehanna river at the mouth of Bald Eagle creek, on branches of the Beech Creek and the Pennsylvania railroad; midway between Philadelphia and Erie. It is the centre of a large lumber trade, has several saw and planing mills, machine-shops, foundries, furnace, tanneries, paper mill, cigar box factory, cigar factory, sewer-pipe works, fire-brick works, silk mill, breweries, and furniture factory. The first settlement was made in 1769, and, in 1833, it was incorporated as a town. In 1844 it was made a borough, and in 1870 received its city charter. The State Central Normal School is situated here. Some of the prominent buildings are the court-house, a hospital, and several of the churches. The city has a circulating library containing about 7,000 volumes. Pop. (1900) 7,210; (1910) 7,772.

LOCKJAW. See TETANUS.

LOCK'PORT, *lŏk'pōrt:* N. Y., city, county-seat of Niagara county; on the Erie canal, and on the Erie, the Buffalo & Lockport, and the New York Central railroads; 12 miles from Lake Ontario, 20 miles east of Niagara Falls, and about 25 miles north by east of Buffalo. It was settled in 1823 by workmen who were employed on the Erie canal. On March 26, 1829, it was incorporated as a village, and became a city 1865, April 11. It is situated in a fertile agricultural region; but the extensive water-power obtained from the canal has made it an important manufacturing city. The 10 large locks of the canal, which here make a descent of 66 feet, have given name to the city. The canal passes through a deep cut, an excavation in the solid rock, several miles in length. The New York Central railroad bridge, 500 feet long, crosses the canal here, at a height of 60 feet above water. There are large sandstone and limestone quarries in the vicinity.

The chief manufactures are pulp and paper. Holly waterworks machinery, wood-work machinery, machinery for flour mills, glass, rolling-mill products, cotton-batting, wagons and carriages, brooms, flour, indurated fibre, aluminum, cotton and woolen goods, and creamery products. Lockport has 20 large manufacturing establishments, which have nearly 12,000 employees. In addition

to the trade in manufactured articles, the city has an extensive trade in the quarry products, and in grain and fruits. It has (1903) four banks, with a combined capital of $3,500,000. Some of the prominent buildings are the high school, the new government building, and the court-house. It has 19 churches and good public and parish schools. It is the seat of Saint Joseph's Academy. The city owns and operates the waterworks. The government is vested in a mayor and a council of 10 members, elected annually. Pop. (1910) 17,970.

LOCKRAM, n. *lŏk'răm* [OF. *locrenan*—from the town *Loc-Renan*, in Bretagne]: formerly the name for a coarse unbleached linen.

LOCKROY, *lŏk-rwâ*, Edouard Etienne Simon Auguste: French journalist: b. Paris, France, 1838, July 18. He took part in Garibaldi's Sicilian expedition and was prominent as a journalist before and after the war with Germany. On account of his radical articles published in *Figaro*, *Le Rappel*, and *Le Peuple Souverain*—a popular political journal, of which he was editor—he was imprisoned for a few months in 1872 and again in 1873. He entered the assembly in 1872 as deputy for the Seine, there voting with the extreme Left; in 1873 was elected from Bouches-du-Rhone, and in 1876 from Aix. He was minister of commerce 1886-7, minister of education 1888-9, and minister of marine 1895-6, 1898, and 1898-9. His published volumes of collected newspaper articles include: *The Eagles of the Capitol* (1869); *Down with Progress* (1870); *The Commune and the Assembly* (1871); *The Rebel Island* (1877); *Von Moltke* (1891), memoirs; *A Mission in the Vendée*, 1793 (1893).

LOCK'WOOD, Belva Ann Bennett, A.M., B.L.: American lawyer and reformer: b. Royalton, N. Y., 1830, Oct. 24. She was graduated from Genessee College, Lima, N. Y., in 1857, and taught school 1857-58. She was married in 1848 to Uriah H. McNall (d. 1853), and in 1868 to Dr. Ezekiel Lockwood. She studied law at Washington, and was admitted to the bar in the District of Columbia in 1873. Before that time she had secured the passage of a bill giving women employees of the government equal pay for equal work; in 1879 she obtained the passage of a bill permitting women to practice before the United States Supreme Court, and was admitted under this law in the same year. She has been engaged in many important law cases, some before the supreme court, and was one of the attorneys in the probate of the will of Myra Clarke Gaines. She has also been active in temperance, peace, and woman suffrage movements; has been secretary of the American branch of the International Peace Bureau; and in 1884 and 1888 was the nominee of the Equal Rights Party for President of the United States. In 1896 she was commissioned by the secretary of state to represent the United States

at the Congress of Charities and Corrections in Geneva, Switzerland; in 1901 she was elected president of the Women's National Press Association. She has for several years been interested in the claims of the North Carolina Cherokee Indians, and in 1900 had a bill before congress to prevent encroachment upon their territory. In 1906, with others, she secured a judgment of $500,000 against the United States for the Eastern Cherokees. She also prepared an amendment to the statehood bill before congress in 1903, granting suffrage to women in Oklahoma, Arizona, and New Mexico.

LOCKWOOD, Henry Hayes: American soldier, tactician, and educator: b. Kent county, Del., 1814, Aug. 17; d. Washington, D. C., 1899, Dec. 7. He was graduated from West Point in 1836, served as lieutenant of the 2d artillery in the Seminole war in Florida (1837), resigned from the army and undertook agriculture in Delaware. In 1841 he became professor of mathematics in the United States navy, in 1845 of natural philosophy at the Naval Academy, where he was professor of artillery and infantry tactics in 1845-61, and of astronomy and gunnery in 1851-61. He entered the civil war as colonel of the 1st Delaware infantry, on Aug. 8, 1861, was promoted brigadier-general of volunteers, at Gettysburg commanded a brigade of the Twelfth corps, and in 1863-4 was commander of the Middle Department. Subsequent to the war he was professor of natural philosophy at the Naval Academy, and in 1871-6 was connected with the naval observatory. He published *A Manual for Naval Batteries* (1852), and *Exercises in Small Arms and Field Artillery,* arranged for naval service (1852).

LOCKWOOD, Ingersoll: American author: b. New York 1841. Besides such works for juvenile readers as *The Travels of Little Baron Trump; Wonderful Deeds of Little Giant Roab; Extraordinary Experiments of Little Captain Doppelkopp;* and *Baron Trump's Journey Underground,* he has written *Legal Don'ts; Private Letters of a French Woman;* etc.

LOCKWOOD, James Booth: American soldier and Arctic explorer: b. Annapolis, Md., 1852, Oct. 9; d. Cape Sabine 1884, April 9. He entered the army as 2d lieutenant in 1873, and served till 1880 in the west. He volunteered to accompany the Lady Franklin Bay expedition to the Arctic regions and was made second in command. His fame rests on the discovery of Lockwood Island, in lat. 83° 24′ N., the farthest northern point of land or sea up to that time. His body was brought to the United States and interred in the grounds of the Naval Academy. Consult Lanman, *Farthest North* (1885).

LOCKYER, *lŏk'yėr,* Sir Joseph Norman, F.R.S., LL.D.: astronomer: b. Rugby, England, 1836, May 17. He received a private-school and continental education; be-

came a clerk in the war office 1857; studied mathematics and astronomy; was elected fellow of the Royal Astronomical Soc. 1860; appointed editor of *Army Regulations* 1865; began telescopic observations of the sun, and applied an original method for observing the red flames without an eclipse 1868; and was elected a fellow of the Royal Soc. 1869. In 1870 he was appointed secretary of the royal commission on scientific instruction and chief of the English government eclipse expedition to Sicily; 1871 was chief of the eclipse expedition to India, and became Rede lecturer to the Univ. of Cambridge; and 1874 was Bakerian lecturer to the Royal Soc. and was voted its Rumford medal. He has conducted many other expeditions, notably those in 1882, 1886, 1896, 1898, and 1900; in 1875 became astronomical lecturer at South Kensington, and since 1881 has been professor of astronomical physics in the Royal College of Science. Besides contributions to *Nature*, he has published *Elementary Lessons in Astronomy and Contributions to Solar Physics* (1873); *The Spectroscope and its Applications* (1873); *Primer of Astronomy* (1874); *Studies in Spectrum Analysis* (1878); *Star-Gazing, Past and Present* (1878); *Chemistry of the Sun* (1887); *Movements of the Earth* (1887); *Meteoric Hypothesis* (1890); *Dawn of Astronomy* (1894); *Rules of Golf* (1896); *The Sun's Place in Nature* (1897); *Recent and Coming Eclipses* (1897); *Inorganic Evolution* (1900); etc. He was president of the British Association for the Advancement of Science 1903-4.

LOCO, *lō'kō*, in Music: indicates that the notes are to be played exactly as written.

LOCO DISEASE: a disease found in sheep and horses and occasionally in cattle. It is caused by eating certain species of *Astralagus*, a genus of the natural order *Leguminosæ*, commonly known as loco or crazy weeds. The first effects of the weed are stimulating, but continued eating produces vertigo, champing of the jaws, partial or perhaps total deafness and blindness, and if the disease be acute death may occur within three days. In the chronic form death may be averted for months and sometimes years, but the animal develops nervous symptoms and muscular incoördination, and becomes unable to walk, finally dying of exhaustion or starvation or both. The disease is a habit, usually acquired by healthy animals through imitation of locoed animals that search for and feed almost exclusively on loco weeds. As no medicinal treatment is effective, locoed animals should be separated from a healthy herd.

LOCOFOCO, n. *lō-kō-fō'kō* [according to some etymologists from L. *loco foci*, instead of fire: other derivations are suggested]: formerly a familiar name for a member of the democratic party; applied especially to the radical portion of the democratic party, because at a meeting in Tammany Hall, New York, 1834, in which there was great

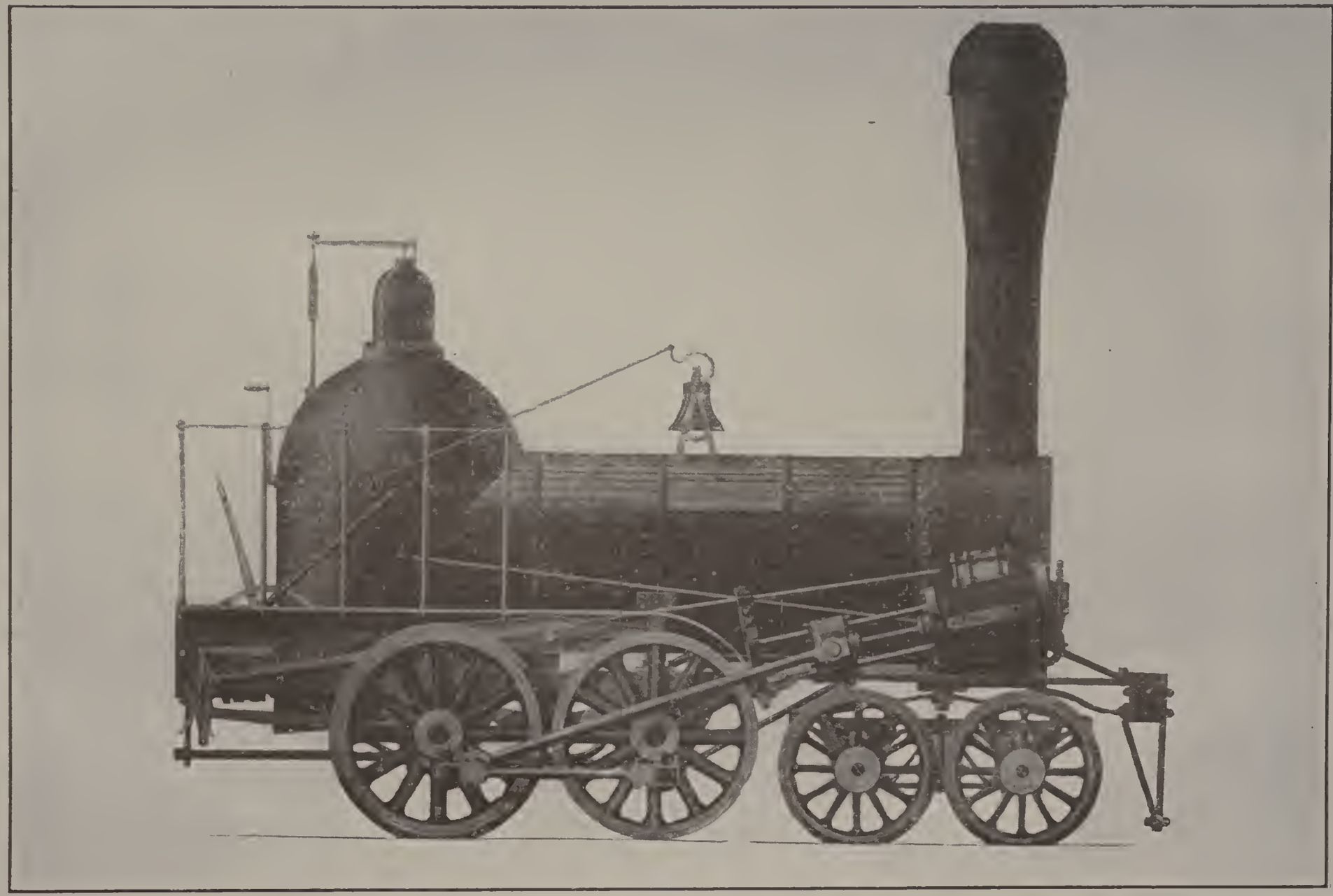
diversity of sentiment, the chairman left his seat, and the lights were extinguished, with a view to dissolving the meeting; when those in favor of extreme measures produced loco-foco matches—then a comparatively recent invention, rekindled the lights, continued the meeting, and accomplished their object.

LOCOMOTION, n. *lō′kō-mō′shŭn* [F. *locomotion*—from L. *loco*, in a place; *motĭōnem*, motion—from *motus*, moved]: the act or power of moving from place to place; progress from place to place. **Lo′como′tive**, n. *-tĭv*, a steam-engine on a railway which draws the carriages and moves along with them (see Steam Car: Steam Engine). Adj. moving from place to place; not stationary. **Lo′comotiv′ity**, n. *-ĭ-tĭ*, power of changing place.

LOCOMOTIVE, n.: an engine driving its own wheels for the purpose of hauling cars on a track; usually a steam-engine with horizontal tube boiler, one or more pairs of driving-wheels, a cab for the engineman, and a tender in the rear for carrying fuel. Richard Trevithick of England built the first L. that deserves the name in 1803, though George Stevenson is generally credited with the invention. Trevithick's L. ran on four drivers, used high-pressure steam, turned the exhaust into the smokestack, employed a return-flue boiler, and one very long cylinder. In 1813 William Hedley of England built the 'Puffing Billy,' the first grasshopper L., so-called because it had two walking-beams on top, with long jointed connections. Stevenson's first L., built in 1825, had no really original features, but brought him fame and reputation because it was better made and better arranged than others, and because he had the push and energy to induce capital to build a costly railway on which to operate it.

The Stockton & Darlington R.R. was opened in 1825, and Stevenson was engineer; but he went on building L. and in 1829 entered the 'Rocket' in a competition for the best L. It won the prize, making 29 miles an hour, and developed good hauling power, though it weighed only $4\frac{1}{4}$ tons. It had 8x16½ in. cylinders, 3 ft. 8½ in. drivers, and a tube boiler 6x3⅓ ft.

In 1829 Peter Cooper built an experimental L. that made 18 miles an hour, hauling 41 persons. The first commercially successful L. used in the United States was the 'Stourbridge Lion,' imported in 1829; it had a 10x4 ft. boiler, 7½x36 in. cylinders, and was one of four purchased by the Delaware & Hudson Canal Co. Matthew Baldwin's first L. was built in 1832, and this was the beginning of the Baldwin Locomotive Works of Philadelphia, which became the largest in the world. In 1890 there were 32,000 L. in use in the United States, and in 1906, 50,000. There are 19 works manufacturing L., and a few are made for mine use, operating by compressed air, while a considerable and increasing number of electric L. are being built. From 1890 to 1900 the manufacture in the U. S. averaged nearly 2,000 annually, and the number exported rose from



THE GOWAN AND MARX LOCOMOTIVE 1839.

137 to 525 a year. In 1906 about 3,000 were manufactured, and 662 were exported, Japan being the largest buyer.

The steam L. is a development of the steam-engine as applied to hauling cars on tracks. To understand the principles by which the expansion of steam is made to do the work of turning the wheels and hence drawing the train, see BOILER and STEAM-ENGINE. As ordinarily constructed for American railways, the L. has a long boiler full of tubes. The steam there made is led to cylinders, one on each front lower side of the boiler, so positioned that the piston-rods are in line to connect with the driving-wheels. From 4 to 10 drivers are used, the increase being with heavier L., designed to draw heavier trains. The front part of an American L. rests on a truck, to enable it to turn comparatively short curves. In front is a pilot, formerly called a cow-catcher, and above a headlight, for illuminating the track at night. Back of the boiler is the engineman's cab, where he operates the machinery. Below the forward part of the cab is the fire-box, where the coal is burned to make the steam. Convenient to the engineman's hand is the starting lever, pulling which turns on the steam, and the throttle for shutting off the steam. There is also a valve for operating the whistle and a lever for setting the airbrake (q. v.). For operating the valves of a L. a mechanism called the link-motion is employed.

English and Continental L. are usually made with only one pair of drivers, which are adapted to the lighter trains hauled there. To transport the heavy freight demanded in the U. S. octopod and decapod L. have been built, having 8 and 10 drivers respectively, and weighing nearly 200,000 tons. The traction or pulling power of such a L. is nearly 50,000 tons. The steps by which the American L. came to differ from the Continental L. are: the introduction of the swiveling truck, in 1832; the use of a cross-head pump for feeding water to the boiler, in 1833; the substitution of the half-crank driving axle for a crank-axle (1834); connecting the driving-wheels outside (1835); coupling the drivers (1836); putting counterweights on the drivers (1837). The wooden cab with the glass window to protect the engineman from the weather was introduced in the U. S. in 1840.

The cost of a L. in 1832 was about $4,000. Since 1880 the value of a first-class L. has varied roughly between $8,000 and $17,000. The L. has been steadily improved as well as enlarged. Since the time of Stevenson the weight and tractive power of a L. has increased 40 times, and the speed three times. Since railway tracks have a set gauge in width, and L. cannot be built any higher than the bridges they go under, the development has been entirely one of length, and great ingenuity has been displayed by manufacturers in making the mechanism more powerful and effective under such restrictions. The arrangement of the fire-grate has been altered many times, to increase the area, and consequently the rate at which coal could be burned, thus permitting the turning of more water into steam, with the development of higher power.

About 1890 the compound L. was introduced, that is, instead of using one steam cylinder on each side of the engine, two were placed on each side—one a high and one a low-pressure cylinder, the latter using the steam a second time and expanding it still further. The saving effected by compounding L. cylinders is about 8 per cent. To understand the principle, see STEAM-ENGINE. A bogy L. is one of the American swiveling truck pattern, so called in England. A camel-back L. is one with a sloping fire-box and a cab over the middle of the boiler, introduced about 1860. A mogul L. is one with three pair of drivers and one pair of truck-wheels. The traction engine, sometimes called a road L., is one with broad wheels adapted to run on a common road. They are used in South Africa, and in parts of America for hauling logs, etc.

Experimental electric L. were built as early as 1842, and in 1850 one made a trip from Baltimore to Washington. The electric L. is simply a car having electric motors on its axles, with accompanying mechanism to operate the car, and the conveniences used on a steam L., the whole being built heavily enough to give it a grip on the track sufficient to enable it to pull a train when a strong enough electric current is received. In 1891 the first commercial electric L. was built by the Thomson-Houston Co. for freight service at Whitinsville, Mass. It hauled 300 tons at five miles an hour. In 1892–5 the General Electric Co. built one for the Baltimore & Ohio R.R. for use in the Baltimore tunnel; it developed 1,500 h.p. In 1907 the New York Central R.R. established an electric zone in and north of New York City, and operated the trains with electric L. Most electric railways are operated, however, without L., the motors being placed on the axles of the cars. See ELECTRIC RAILWAY.

LOCOMO'TIVE, COMPRESSED AIR: engine for traction using compressed air instead of steam. Compressed air has been found serviceable for stationary engines for rock-drilling in tunnels, etc.; and it has been tried on short lines in a few streets in Glasgow, Paris, New York, and elsewhere. French engineers maintain that actual experiment shows that, thus far, the PNEUMATIC MOTOR (another name for Compressed Air Locomotive) is about three times as expensive as steam. The Glasgow experience is in the same direction. But Gen. Herman Haupt, American engineer, asserts that practice in Paris and experiments in New York show an economy of coal as compared with the direct application of steam, of four to one in favor of compressed air. Possibly the use of this power may have a future development as yet unknown.—See HEAT, *Latent Heat, Specific Heat:* ATMOSPHERIC ENGINE: PNEUMATIC DISPATCH: CALORIC ENGINE.

LOCOMOTOR ATAXIA, *lō'kō-mō'tŏr ă-tăk'sĭ-ă* [L. *locus*, a place; *mōtus*, moved; and *ataxia*, which see under ATAXIC]: a disease of the nervous system, usually occurring in adults from 40 to 50, and characterized by pain, inability

MODERN HIGH-SPEED ENGINE.

to walk, and by progressive weakness which leads finally to death. In the vast majority of patients it first shows itself by neuralgic pains of the lower extremities. Thus, there may be acute darting and lightning-like pains, lasting from half an hour to an hour or two, about the ankles, in the instep, shooting up the leg, or in the thighs. Occasionally these pains are present in the arms and trunk. They are frequently diagnosed as neuralgia, and it is not until development of the symptoms of ataxia (q.v.)—inability to walk in the dark, and to place the foot or hand where the mind wishes it to be placed—that the true nature of the constant neuralgic pains is recognized. With the gradual development of the inability to walk may be a number of other symptoms—acute, lightning-like pains in the stomach, intense, sometimes acute, pain in the bladder, sometimes loss of voice, etc. There may be patches of anæsthesia over the body and there is usually progressive muscular weakness. Loss of knee-jerks is an important early sign.

Associated with ataxia of the legs, there may be some ataxia in the hands, whereby the finer movements of buttoning the clothing, of writing, etc., may be interfered with. A very constant and usually a very early sign of locomotor ataxia consists in certain changes in the reactions of the pupil of the eye to light. This symptom is technically known as the Argyll-Robertson pupil, and shows a fixed pupil when exposed to the influence of light, but a pupil that dilates or contracts normally when tested for its powers of accommodation. The progress of the disease is usually very slow; remissions occur, which give great hope to the patient and afford ample opportunities for all forms of charlatanism; but the final outcome is usually hopeless. Many conditions of the spinal cord are known in which some of the symptoms of locomotor ataxia are present, chronic neuritis from alcoholism being one. As many of these are recoverable, the diagnosis of locomotor ataxia is an extremely difficult one.

LOCOPHONE, *lō'kō-fōn:* a name applied to a system of telegraphy from moving trains, under letters patent to L. J. Phelps. In it the familiar principle of the induction coil is utilized. An insulated wire is laid along the bed of the railroad between the tracks. A second wire is carried by a special car. This wire is formed into a long coil, whose layers or convolutions lie parallel to the axis of the car. The portion beneath the car is cased in gas pipe. If the ends of this wire are closed it is evident that any impulse of electricity sent through the wire between the tracks will send a corresponding impulse through the coil above it. The reverse also is true, so that in this simple arrangement is found the basis for telegraphing from a moving train. The telegraphing car carries a battery and Morse sounder and key in circuit with the coil. The track wire contains corresponding apparatus. It has been found to work

well in practice, but has not been adopted to any great extent, on account of the practical difficulty in preventing confusion when many messages are received by the same wire. Its interests have been merged with those of other inventors, Edison, Gillilland, etc., and a more perfect system has been the result of the combination. See TELEGRAPHY, TRAIN.

LOCULAMENT, n. *lŏk'ū-lă-mĕnt*, or LOCULUS, n. *lŏk'-ū-lŭs* [L. *loculamen'tum*, a case, a receptacle—from *locŭlŭs*, a small receptacle, a cell]: in *bot.*, a cavity in the pericarp containing the seed; one of the cells of the anther. LOCULAR, a. *lŏk'ū-lĕr*, relating to the seed-cell or compartment of an ovary. LOC'ULOSE, a. *-lōs*, or LOC'-ULOUS, a. *-lŭs*, divided internally into cells.

LOCULICIDAL, a. *lŏk'ū-lĭ-sī'dăl* [L. *locŭlŭs*, a cell; *cædĕrĕ*, to cut]: in *bot.*, applied to fruit dehiscing through the back of the carpels.

LOCUM TENENS, *lō'kŭm tē'nĕnz* [L. *lŏcum*, the place; *tĕnens*, holding]: one temporarily occupying the place of another, as that of a medical man or clergyman during absence or illness; a deputy or substitute.

LOCUS, *lō'kŭs:* in *Mathematics:* the curve or surface representing a given equation or system of equations. The variables in the equations being taken as co-ordinates, the various points to which they correspond usually from a continuous figure, the locus, whose properties may be studied in connection with the equations. See CO-ORDINATES and GEOMETRY.

LOCUS DELICTI, *lō'kŭs dĕ-lĭk'tī* [L. *lŏcus*, a place; *delicti*, of wrong doing]: in *criminal law*, place where a crime was committed. LOCUS STANDI, *lō'kŭs stăn'dī* [L. *standi*, of standing]: the right to interfere or take a part; a recognized position. LOCUS PŒNITENTIÆ [L. place of repentance]: in *Scotch law*, time to withdraw from a bargain. The general rule is, that until the contract is finally settled, either party may retract; but if *rei interventus* has intervened, i.e., if some act has been done by the other party on the faith of the agreement, and by which his position has been altered, the *locus pœnitentiæ* is barred. Much depends on the circumstances of each case as to the application of the rule. LOCUS IN QUO, *ĭn kwō* [L. *locus*, the place; *in quo*, in which]: the place or spot in question; the place where the thing was done.

LOCUST, n. *lō'kŭst* [L. *locusta*, a lobster, a locust: It. *locusta:* F. *locuste*]: a migratory winged insect, very destructive to vegetation (see below): a name applied to several plants or trees (see below). LOCUSTA, n. *lō-kŭs'-tă*, in *bot.*, a spikelet of grasses formed of one or several flowers. LOCUST-BEANS, a name for the sweet pods of the carob-tree; the *Ceratōnĭă sĭlĭquă:* see CAROB. LOCUST WOOD, the wood of a tree called the *Robinĭă pseudacācĭă*, ord. *Legumĭnōsæ*, extremely hard, strong, and durable, and in extensive use.

LOCUST.

LOCUST (*Acrydium; Locusta* of some entomologists): insect; type of a family *Acrydidæ* (*Locustidæ* of some entomologists), of order *Orthoptera,* section *Saltatoria* (see GRYLLUS). The term locust is often used to designate various insects which though bearing marked resemblance to, are not properly classed with, the true locust. (See CICADA; GRASSHOPPER.) The locust is larger than either the grasshopper or the cricket, and has shorter legs. It has five eyes, three of which are on the top of the head. The wings are large and often show beautiful colors. The thorax is large and the muscles of the wings, like those of the legs, are very strong. The jaws are large and powerful, while the stomach and alimentary canal are adapted to a creature of the greatest voracity.

With the exception of the Arctic regions, the locust is found in all parts of the world. It is most abundant and destructive in tropical countries, but often appears in vast swarms in portions of the temperate zones which have hot and comparatively dry summers. It has been known from a very early period. It is mentioned in the Bible as one of the plagues of Egypt, and from time immemorial has been a type of terrible devastation. In s. Asia and in portions of n. Africa they frequently appear in such vast numbers as to obscure the sun during their flight. Invasions do not occur every year, but the intervals of freedom from them are of uncertain and unequal duration.

The permanent home and natural breeding grounds of the locust are in dry and elevated regions. Here they multiply with amazing rapidity. When their numbers become too great to be sustained in these districts, they invade other regions in search of forage, and apparently incited in some degree by a migratory instinct which impels them to go farther from their natural homes than is necessary to obtain an adequate supply of food. For some reason not known, the swarms from any particular district always take flight in a certain direction and never pass beyond certain well defined limits. Still more remarkable is the fact that swarms which are hatched from eggs laid in the productive regions visited by locusts driven there by hunger, or by the migratory instinct, take their flight in the opposite direction to that of their progenitors and migrate from the fertile fields in which their lives began to the comparatively barren regions from which the parent swarms removed.

In their flight the swarms keep at a height of at least 40 ft. above the ground, and sometimes rise to several hundred feet. Their progress is gradual; and wherever they alight to feed the destruction of vegetation is complete. The distance traversed depends on many circumstances, doubtless largely on the force of the wind, but 1,000 miles is not an extraordinary stretch for some of the old world species to cover.

LOCUST.

The various species of the locust have their special homes in which they breed and from which their armies go forth to devastate other regions. The *Acrydium migratorium* is the most common and most destructive species in the old world. Its home is on the steppes of Asia, and in its migrations it visits large areas in Asia and e. Europe. The *Acrydium peregrinum* is terribly destructive in Africa and tropical Asia. In the United States the principal species are the *Caloptenus femur-rubrum*, a red legged 'grasshopper,' which is distributed over a large area and occasionally is destructive to crops in the Middle and New England States; and the *Caloptenus spretus*, which has its breeding grounds in Colorado and adjacent elevated regions, and which frequently devastates large areas w. of the Mississippi river.

Prior to 1818 the *C. spretus*, often called the Rocky Mountain locust, was comparatively unknown, and it did not attract general attention until 1864, when it was very destructive in portions of the Northwest. During the summers 1873-76 it swept over a large area and caused enormous loss to inhabitants of the Mississippi Valley: the damage in a single year was estimated at fifty million dollars, bringing thousands of farmers to the verge of starvation. Since 1876 the invasions have been confined to a much smaller area and have been far less disastrous. In elevated regions of Colorado and portions of Oregon, Idaho, Utah, Wyoming, and Montana, and in that part of the British possessions n. of this section as far as 54th parallel of latitude, this species of locust is always found. It occasionally visits the w. part of Manitoba and large portions of N. and S. Dakota and Nebraska. In these localities it works great ravage. It also breeds here for a few years, but does not remain permanently. A large part of the remainder of the great agricultural region w. of the Mississippi is liable to invasion, but the insects remain only one season.

Like other species of the locust, the *C. spretus* multiplies with amazing rapidity. From their natural breeding grounds in the mountainous regions, vast swarms go to the fertile sections which have been brought under cultivation. Here they not only devour the vegetation, but the females deposit millions of eggs in the soil. The next season the insects hatched from these eggs work great havoc until they obtain wings, when they migrate to the higher lands which form the natural home of the species. The eggs are deposited in the ground in tubes, each of which contains not less than two dozen eggs. As each female lays from two to four of these tubes the multiplication of a large swarm is almost incalculable. The tubes are composed of mucous matter and serve to protect the contents from injury by contact with the soil, while offering little obstruction to the hatching of the eggs or the egress of the young insects. The eggs remain intact during the winter. The

period of hatching varies from March until May, according to the temperature of the region in which the eggs are laid. The young commence their destructive work almost as soon as hatched, but do not obtain wings for about seven weeks. During this brief period they moult five times. There is usually but one brood per year, though a second brood is sometimes hatched, but too late in the season to become vigorous or to do much damage to crops.

Fortunately for agriculturists the locust has numerous enemies, some of which are quite formidable. Among them are many insectivorous birds and mammals, and various reptiles and beetles. Vast numbers of eggs are destroyed by insects, and the locust is preyed upon by several destructive parasites.

Various remedial measures have been adopted, but thus far with little effect. While on its devastating march the locust invariably prefers 'death to a retreat,' and all efforts are powerless to prevent the progress of the vast army in its chosen course. Millions may be destroyed, but millions more march over the bodies of the slain. Consequently the efforts to check an inroad of these small but formidable creatures by digging trenches, the use of heavy rollers with which to crush them, of oil pans drawn over the fields by horses, or of machines for catching them in bags, accomplish but little. For destroying large swarms these measures are wholly inadequate. Efforts to prevent the hatching of the eggs are far more efficient. By harrowing the land late in the fall, vast numbers of eggs will be destroyed. The burning over of the land after the grass has obtained a good start in the spring is also useful on mowings and pastures. But the most certain method of preventing losses by their depredations seems to be the growing of crops which mature early and are ready to be removed from the land before the insects appear. As the region in which they breed becomes more thickly settled and the land is more generally brought under cultivation, it is probable that the numbers of this pest will be greatly diminished and that its ravages will be correspondingly curtailed. The U. S. government has done, and is still doing, very much in investigating the habits of this pest and in giving information and assistance to the residents of the infested districts. In this work several of the state governments co-operate.

LO'CUST TREE: name given in different parts of the world to different trees of nat. ord. *Leguminosæ*.—The Carob Tree (*Ceratonia siliqua*) is often called locust tree in the countries bordering on the Mediterranean, and its pods are the locust beans of the shops: see CAROB. A kind of effervescing beer, made from locust or carob pods, has been sold in London.—The LOCUST TREE of America (*Robinia pseudacacia*), called also the FALSE ACACIA, or THORN ACACIA, and on the continent of

Europe and in Britain, very generally the ACACIA, is a valuable and extremely beautiful tree: see ROBINIA. Its wood, known as *Locust Wood,* is used for all purposes in which great strength, and especially toughness, is required; this latter quality, which it possesses pre-eminently, makes it very valuable for trenails used in ship-building, and large quantities are used for this purpose. It is valuable for making the cogs of wheels.—The HONEY LOCUST (q.v.) TREE, of America is a *Gleditschia.* —The LOCUST TREE of the W. Indies is *Hymenæa courbaril,* gigantic tree, whose pods also supply a nutritious matter, a mealy substance in which the pods are imbedded. It is sweet and pleasant, but apt to induce diarrhea when recently gathered, which property, however, it loses when kept for a short time. A decoction of it, allowed to ferment, makes a kind of beer. The bark of the tree is anthelmintic; it yelds a kind of resin called ANIME (q.v.), and it is valuable as a timber-tree, the timber (also known as *Locust Wood*) being close-grained and tough, and in request in England for trenails, in which form it is generally imported.

LODE, n. *lōd* [AS. *lad;* Icel. *leid,* a way; AS. *lædan;* Icel, *leida,* to lead, to conduct]: among *miners,* a metalliferous or ore-producing mineral vein. They are crevices —more or less vertical, produced by contraction, or the mechanical disturbance of the rock, which have subsequently been filled with metallic ores. LODESTONE, or LOADSTONE (q.v.), tin-stone; magnetic iron ore. *Note.*—LODESTONE and LODESTAR are other and more correct spellings of LOADSTONE and LOADSTAR.

LODEMAN, *lō'dé-man,* ERNEST GUSTAVUS: American horticulturist: b. Neuchâtel, Switzerland, 1867; d. 1896. He was graduated from the Michigan Agricultural College in 1889, in 1890 was appointed assistant to Professor Liberty H. Bailey, of Cornell, and somewhat later an instructor in the university. He was the originator of the 'spray-calendar,' a tabulated form furnishing the dates for spraying the fungi and insect pests of given crops and recipes for the preparation of suitable compounds for such use. His only publication is *The Spraying of Plants* (1896), a valuable manual.

LODE'STAR, LOADSTAR, POLARIS, or GUIDING STAR: various names given to the polar star, which is the last star in the tail of the Little Bear. It is a star of the second magnitude, located 1° 20′ from the north pole.

LODGE, n. *lŏj* [F. *loge,* a hut or small apartment; *loger,* to sojourn—from It. *loggia*—from mid. L. *laubĭă,* a lodge: O. H. G. *laubja,* a hut of leaves]: a small house or cottage at the gate of an approach to a mansion-house; a small house in a forest, etc.; a meeting or club of Freemasons: V. to lay or deposit for safe keeping; to place or plant; to fix or settle in the mind; to furnish with a temporary dwelling; to reside in hired apart-

ments; to reside temporarily. LODG'ING, imp.: N. a place of rest or temporary residence. LODGINGS, n. plu. a room or rooms hired in the house of another. LODGED, pp. *lŏjd.* LODGED, in *her.*, a beast of chase, as a stag, is said to be lodged when lying down with its head erect: a beast of prey in the same position is said to be couchant. LODGER, *lŏj'ėr*, one who lives in a hired room or rooms in the house of another. LODG'MENT, *-mĕnt*, act of lodging; a being placed or deposited at rest for keeping for a time; accumulation; collection; in *mil.*, a work thrown up by besiegers during their approaches in some dangerous post to secure it from being retaken, and to protect the troops from the enemy's fire. LODGING-HOUSE, a house in which a room or rooms furnished are let. LODGING-MONEY, allowance, in the British army, granted to officers and others, for whom suitable quarters cannot be provided in barracks. TO LODGE AN INFORMATION, to make a formal complaint or accusation to the police or a magistrate.—SYN. of 'lodge, v.': to place; plant; fix; settle; harbor; cover; reside.

LODGE, GEORGE CABOT: American poet: b. Boston 1873, Oct. 10. He is a son of H. C. Lodge (q.v.), and was graduated from Harvard in 1895. During the Spanish-American war he served in the American navy as ensign. He has published *Song of the Wave* (1898); *Poems* (1902); *Cain*, a drama (1904); *The Great Adventure* (1905); etc.

LODGE, GONZALES, PH.D., LL.D.: Americal classical scholar: b. Fort Littleton, Pa., 1863, Dec. 19. He was graduated from Johns Hopkins University in 1883, was professor of Greek in Davidson College, N. C., 1886-8, and at Bryn Mawr College 1899-1900. Since 1900 he has been professor of Greek and Latin at the Teachers' College of Columbia. He has published *Lexicon Plautinum* (1901), and with Gildersleeve, *Gildersleeve-Lodge Latin Grammar and Latin Composition*. He has edited *The Gorgias of Plato* (1890), and the *Gildersleeve-Lodge Latin Series.*

LODGE, HENRY CABOT, LL.D.: American politician and author: b. Boston 1850, May 12. He was graduated from Harvard in 1871 and from the law school in 1875, being admitted to the bar in 1876. In 1873-6 he was editor of the *North American Review;* was then lecturer on history at Harvard till 1879, when he became editor of the *International Review* till 1881. Becoming active in political life, he served two terms in the Massachusetts legislature; was elected to congress in 1886, and served till 1893, when he was elected to the senate; and was re-elected in 1899 and 1905. He was also delegate-at-large to the republican national conventions in 1884 and 1896, and permanent chairman of the 1900 convention. He has strongly advocated protection, and the restriction of immigration and the protection of the franchise by educational qualifications; he was a strong supporter of the

policy of the administration during the Spanish war, and in regard to the Philippines, and was made chairman of the senate committee on the Philippines, and a member of the committee on foreign relations. He has published *Life and Letters of George Cabot* (1877); *Short History of the English Colonies in America* (1881); *Alexander Hamilton* (1882); *Daniel Webster* (1883), *and George Washington* (1889), in the *American Statesmen* series; *Studies in History* (1884); *Boston* (1891, in the *Historic Towns* series); *Hero Tales from American History* (with Theodore Roosevelt, 1895); *Certain Accepted Heroes* (1897); *Story of the American Revolution* (1898); *The War with Spain* (1899); *A Fighting Frigate and Other Essays; A Frontier Town and Other Essays* (1906), etc.; and a volume of *Speeches;* he has also edited the works of Alexander Hamilton (1885).

LODGE, Sir Oliver Joseph, M.SC., F.R.S., D.SC., LL.D.: English physicist: b. near Stoke-upon-Trent, Staffordshire, 1851, June 12. He was educated at University College, London, and was demonstrator of physics there in 1875, and in 1877 professor. He was professor of physics in University College, Liverpool, 1881-1900, and since the date last named has been principal of the University of Birmingham. He has published *Elementary Mechanics* (1877); *Modern Views of Electricity* (1889); *Pioneers of Science; Signalling Without Wires; Lightning Conductors and Lightning Guards; School Teaching and School Reform; Easy Mathematics for School Use;* etc.

LODGE, Thomas: English dramatist and poet: b. West Ham, near London, England, about 1556; d. London 1625, September. He entered at Lincoln's Inn, but seems to have led a wild and rollicking life, and in 1589-91 varied his life by taking part in two sea expeditions against the Spaniards, in the neighborhood of the Azores and Canary Islands. On the earlier of these he wrote the famous pastoral *Rosalynde: Euphyes's Golden Legacie* (1590), which supplied Shakespeare with the basis of *As You Like It.* Lodge himself wrote two dramas, *The Wounds of Civil War* (1594; reprinted in Hazlitt's Dodsley's *Select Collection of Old Plays*, Vol. VII), and *A Looking-glass for London and England* (1594), in collaboration with Robert Greene. Consult Jusserand, *The English Novel in the Time of Shakespeare* (1890).

LODG'INGS: part or all of a house rented by one person of another for house-keeping purposes, or as a sleeping-place. The word has passed through several grades of meaning in different places and at different times, till it is now almost impossible legally to distinguish a lodger from a boarder, a hotel guest, or a transient or permanent tenant. The act of lodging originally implied only a person's sleeping at night on the premises of another, the provision of supper and breakfast being no part of the agreement between the parties. In large

cities many persons hire furnished rooms in a house to sleep in and take their meals elsewhere. Where meals also are furnished, and the occupation of the sleeping apartment extends over a single night, the person becomes in the American sense a boarder; and he may speak of his quarters as lodgings, but more generally will call them his boarding-house. A lodger may remain such or become a boarder; and a boarder may remain such, or become a mere guest in the American hotel sense. A hotel guest may be a lodger, that is a sleeper for a single night; or a guest, remaining as long as he pleases and taking his meals in the hotel or elsewhere; or a permanent boarder, sleeping and eating on the premises. Lodgings, therefore, may comprise a whole furnished house or a single room with sleeping accommodations; may be occupied one night or for any period; may be had with or without board; and may be hired or rented in a hotel or on the premises of a private family. Different local legislation in various states tends still further to cloud the distinction between the several grades of meaning of lodgings. Laws defining the privileges and responsibilities of landlords and tenants and of hotel and inn-keepers and their guests; those governing actions for the recovery of debt, exemptions from levy and forced sale, and a variety of liens; and in many states local excise laws, are applicable in various degrees.

LODI, *lō'dē:* flourishing town of n. Italy, province of Milan, on the right bank of the Adda, 19 m. s. of Milan, on a gentle slope in a highly fertile district, and contains 27,811 inhabitants. It is protected by walls and a strong castle, erected by the Visconti, but lately appropriated as a military hospital. Lodi is a bishop's see and the seat of a college, and contains many fine buildings. Its chief manufactures are linens, silks, chemical products, and Majolica porcelain, for which it is famous. Its great trade is in cheese, especially the famous species known as Parmesan, which, instead of being manufactured at Parma, as one might infer from the name, is made exclusively in the vicinity of Lodi, where several thousand cows are kept for the purpose.—Lodi Vecchio, or Old Lodi, is a ruined village about 5 m. w. of the modern town. It was colonized by the father of Pompey the Great, hence its name, *Laus Pompeia,* corrupted into *Lodi.* Lodi is notable for the victory of the French under Bonaparte, over the Austrians, 1796, May 10, when the long and narrow bridge was carried by the French columns, notwithstanding a tremendous fire from the Austrian batteries.

LODICULE, n. *lŏd'ĭ-kūl* [L. *lodic'ŭla,* a small coverlet]: in *bot.,* a scale at the base of the ovary of grasses.

LODZ, *lōdz:* Russian Poland, the capital of a district in the government of Piotrkow, 76 miles southwest of

Warsaw, and an important manufacturing centre, the terminus of a branch line from the Warsaw & Vienna railway. It has made considerable modern progress owing to the flourishing condition of its cotton, woolen, and other manufactures. Silk goods are also manufactured, and there are dyeworks, breweries, machine-works, etc. The Roman Catholic Poles number about 40 per cent., German Protestants 33 per cent., and Jews 27 per cent. of the population, which from 50,000 in 1872 has increased to over 315,000.

LOEB, *lēb*, JACQUES, M.D.: German-American physiological chemist and biologist: b. Germany 1859, April 7. He studied at Berlin, Munich, and Strasburg, was assistant at both Würzburg (1886-8) and Strasburg (1888-90), studied at the Naples zoological station, and in 1891-2 was associate professor of biology at Bryn Mawr College. In 1892 he became assistant professor of physiology and experimental biology at the University of Chicago, and in 1895 associate professor. He was also professor of physiology at the Rush Medical College of Chicago from 1900. In 1902 he was appointed professor of physiology in the University of California. His chief work has been in physiological chemistry. He is the first to make researches in regard to tropic and chemical reactions in animal life. His experiments have shown that many activities of the animal world previously ascribed to ganglia and brain-centres are really due to such reactions. Thus he found that a certain chemical solution effects the contraction of muscular tissue known as 'heart-beats,' as tested on detached heart-tissue and hearts of certain animals and by introduction of the solution into human blood-vessels. He also made experiments in artificial partheno-genesis. He has published numerous essays, largely in the *American Journal of Physiology;* a volume *Comparative Physiology of the Brain and Comparative Psychology* (1900); *Studies in General Physiology* (1905); etc.

LOEB, LOUIS: American artist: b. Cleveland, Ohio, 1860. He completed his studies in art under Gérôme in Paris, winning honorable mention at the Salon in 1895, and a third medal in 1897. He has won many medals and prizes since. As artist, illustrator, and teacher he has secured a notable place. His studio is in New York. As an illustrator of books and magazines he has shown both strength and inventive ability. In 1903 his exhibition of oils at the new rooms of the Co-operative Society in New York aroused interest in his later work, which shows a steady progress in his artistic achievements.

LOESS, n. *lō'ĕs* [German]: loamy deposit of Pleistocene age, occurring in the valleys of the Rhine and the Danube. It is a pulverulent yellowish-gray loam, homogeneous and non-plastic, and consists of a mixture of

clay and carbonate of lime. It usually tends to cleave in vertical planes, and thus forms cliffs where streams intersect it. In the Rhine, it apparently once covered the whole valley and its tributaries, reaching to a considerable height up the bounding mountains. It has subsequently been greatly abraded, a fringe only of the deposit being left on the mountain-sides, and occasionally some outliers in the widest parts of the valley; the materials have been carried down by the river, and rearranged, as a newer loess or alluvium, in Belgium and Holland. This continuous deposit of fine sediment suggested the notion to the original observers of an enormous lake, whose barrier was at the narrow gorge of the Rhine at Bingen. But the loess occurs further down; besides, the contained fossils are not lacustrine, but those of land-animals (*Elephas* and *Rhinoceros*), and land-shells (*Helix, Pupa,* and *Succinea*). Loess is now believed to be the moraine mud of the Alpine glaciers, which was spread out gently in the valleys of the Rhine and Danube, as the land gradually emerged from the sea. The loess is generally from 30 to 50 ft. in thickness, though sometimes as much as 200 ft. Fossils are not generally distributed in the strata, though sometimes locally abundant. They consist chiefly of land-shells of species now inhabiting the same region.

The European loess is undoubtedly associated with the glacial deposits of the continent, and in North America, where it is strongly developed, being very thick, as it is in parts of China (q.v.), the same relationship obtains. The geologists of the United States Geological Survey maintain that the accumulations which cover enormous areas in the great basin traversed by the Mississippi and its affluents are essentially fluviatile. Richthofen believes the Chinese accumulation to have been of æolian origin, and this theory of wind-blown material has also been advanced with respect to deposits in the United States; but the general opinion of geologists favors the theory of aqueous origin for the whole formation. Consult: Sixth Annual Report of the United States Geological Survey (1888); Chamberlin and Salisbury, *The Driftless Area of the Upper Mississippi Valley;* McGee, *The Pleistocene History of Northeastern Iowa,* in the United States Geological Survey, Eleventh Annual Report (1891); Geikie, *Prehistoric Europe* (1881).

LOEWE, Wilhelm (also called Loewe-Kalbe): German politician: b. Olvenstedt, near Magdeburg, 1814; d. 1886. He was educated at Halle, and adopted the medical profession. Elected in 1848 to the Frankfort parliament, he acted with the extreme party of democracy; became first vice-president of the parliament; and later, at Stuttgart, was its president. Charged with sedition in this, which was considered a revolutionary procedure, and once acquitted, he was nevertheless sentenced to life imprisonment for contumacy. After some

years in Switzerland, France, and England, he came to this country, and for eight years practiced medicine in New York. Availing himself of the amnesty in 1861, he returned to Germany, and in 1863 was elected to the Prussian house of deputies. Four years later he was a progressist member of the North German reichstag. Disagreeing with his party in 1874, on the military law, he attempted to form a new liberal party. In the elections of 1881 he lost his seat.

LOEWENTHAL, *lē'vĕn-tâl,* HENRY: American journalist: b. New York 1853, May 15. Trained in the public schools and the College of New York, he studied law at the Columbia College Law School, taking his degree in 1875. He began newspaper work on the New York *Tribune* as reporter in 1872. In 1875 he was appointed law reporter on the New York *Times* and acting city editor in 1878. In 1879 to 1893 he was city editor, and from 1873 to 1896 had charge of real estate matters. From August 1896 to 1904 he was managing editor, in the latter year becoming manager of the Los Angeles *Examiner.*

LOEWY, *lē-vē',* MAURICE: French astronomer: b. Vienna 1833; d. Paris, France, 1907, Oct. 16. He studied astronomy and was given a position in the observatory at Paris by Leverrier, and after the latter's death assisted Mouchez in the observatory of Montsouris. He was noted for his invention of the *Equatorial-coude,* or Elbow-equatorial, in which the observer remains seated at the upper end of the polar axis of the telescope, as if working with a microscope on a table, with the means of directing his view to any part of the heavens under his control. He also devised improved methods of determining the constants of astronomical refraction and aberration.

LOFODEN, *lŏ-fō'dĕn,* or LOFFODEN, *lŏf-fō'dĕn,* or LOFOTEN, *lŏ-fō'tĕn:* chain of islands off the n.w. coast of Norway, lat. 67°—69° 15′ n., stretching s.w. and n.e. abt. 130 m.—including the *Vesteraalen Islands,* a division of the Lofoden groups e. and n. of the Raftsund; total area 1,560 sq.m. The largest islands are Hindöe (864 sq.m.), Andöe, and Langöe, Ost Vaagen, West Vaagen, and Flagstadöe. All are rugged and mountainous, indeed, some of the eminences in Vaagen attain a height of 4,000 ft., and are covered with perpetual snow. The climate is decidedly milder than on the main land of Norway: the isothermal line marking mean Jan. temperature 32° F., passing s. to Copenhagen. The islanders subsist chiefly by the fishery established previous to the 11th century. After the cod-fishery has terminated (in Apr.), the herring-fishing season comes on, and continues throughout the summer, forming an important industry. Permanent pop. estimated 20,000.

LOFT, n. *lŏft* [Icel. *lopt,* the sky or air: Dan. *loft,*

ceiling, loft (see LIFT 1)]: a floor above another, especially one where anything is stored, commonly under the roof; a gallery in a hall or church, as organ-loft. LOFTY, a. *lŏf'tĭ*, elevated in place, condition, character, sentiment, or diction; dignified; proud; haughty; sublime. LOF'TILY, ad. *-lĭ*, in a lofty manner; sublimely; haughtily. LOF'TINESS, n. *-nĕs*, height; elevation, as in place or position; pride; dignity; haughtiness. ROOD-LOFT, a loft or gallery in a church on which the *rood*—i.e., a representation of the Saviour on the cross—was set up to view—SYN. of 'lofty': tall; elevated; high; stately; exalted; majestic; noble.

LOF'TIE, WILLIAM JOHN, B.A., F.S.A., F.Z.A.: Irish Anglican clergyman, writer on antiquities: b. Tandragee, county Armagh, 1839, July 25. He was educated at Trinity College, Dublin, and after holding temporary church appointments, became assistant minister of the Chapel Royal, Savoy, in 1871. He joined the staff of the *Saturday Review*, and in 1894 that of the *National Observer*. As a writer on antiquarian subjects he successfully combines learning and picturesque statement. He has published *Round About London* (1877; 4th ed. 1880); *Plea for Art in the House* (1877); *Memorials of the Savoy* (1879); *A Ride in Egypt* (1879); *A History of London* (1883); *Authorized Guide to the Tower of London* (1886); *London* (1887); *Windsor* (1887); *Westminster Abbey* (1890); *The Cathedral Churches of England* (1892); *Inigo Jones and Wren* (1893); *Inns of Court and Chancery* (1894); *London Afternoons* (1901); etc.

LOF'TUS, AUGUSTUS WILLIAM FREDERICK SPENCER: English diplomatist: b. 1817, Oct. 4; d. 1904, March 9. He entered the diplomatic service in 1837 as attaché at Berlin and was likewise attaché at Stuttgart in 1844. He was secretary to Stratford Canning in 1848, and after serving as secretary of legation at Stuttgart (1852), and Berlin (1853), was envoy at Vienna (1858), Berlin (1860), and Munich (1862); became ambassador at Berlin 1865, to the North German Confederation 1868-71, and to Saint Petersburg 1871-9. He was governor of New South Wales 1879-85. He published *The Diplomatic Reminiscences of Lord Augustus Loftus* (1892-4).

LOG, n. *lŏg* [Icel. *lág*, a felled tree: Dut. *log*, unwieldy, heavy (see CLOD)]: an unhewn or undressed piece of timber not adapted to any special purpose; a large heavy piece of firewood; among *seamen*, a little board so fixed as to remain upright and motionless in the water, while the ship moves on, for ascertaining the rate of sailing: a school register of daily proceedings, progress, and remarks. The LOG or LOG-BOOK, a book used in registering the rate of a ship's velocity, as indicated by the *log*. LOG-LINE, line thrown over the stern of a ship with the float or log attached, for measuring the rate of

motion. LOGMAN, one who hews timber. LOGWOOD, a red heavy wood (see below). LOGGED, a. *lŏgd*, or WATER-LOGGED, a. rendered motionless as a log; disabled of motion or action by water, as a ship. LOG-HOUSE, a house built of rough-hewn logs, as in the backwoods of N. America. TO LIE LIKE A LOG, to lie heavy and dead without a sign of motion. *Note.*—The LOG of a ship is a contrivance to retain the distant end of a line unmoved in the water while the ship moves onward, and may have been originally only a *log* of wood thrown out behind.

LOG, n. *lŏg* [Heb.]: a Jewish liquid measure, containing about five-sixths of a pint.

LOG, *lŏg:* contr. for LOGARITHM. See LOGARITHMS.

LOG, v. *lŏg*, or LOGGER, v. *lŏg'gėr* [Dan. *logre*, to wag the tail: F. *locher*, to shake from looseness: Ger. *locker*, loose]: in *OE.*, to oscillate. LOG'GING, imp. LOGGED, pp. *lŏgd*.

LOG, or LOG-SHIP, in Navigation; instrument by which a ship's rate of motion through the water is measured. Its simplest form is a triangular piece of light wood, leaded so as to float vertically; this is connected with the log-line so that its flat surface is at right angles to the ship's course. When thrown out—attached to the log-line (see KNOT)—the log meets with such resistance that it theoretically remains stationary in the water, and the log-line passing freely out shows the speed of the vessel. (See KNOT, in Navigation.) There are many improved logs, with complicated apparatus, for marking the way made, changes of direction, etc. The log and line are known to have been used as early as 1570. Computing by the log is an uncertain operation, allowance having to be made for numberless contingencies. In ships of war, it is usual to heave the log every hour; in merchantmen, every two hours. The *log-board* is a board on which the hourly results of the log-heaving are recorded in chalk, with the wind's direction, and other particulars, for the guidance of the officer in charge. The contents of the log-board are entered daily in the *log-book*, with all particulars essential to the history of the voyage, as ships spoken, icebergs seen, land sighted, etc. The *log-book* thus becomes a rough journal; and it is compulsory upon every master of a vessel to keep it properly, and to have it ready for inspection by any ship of war of his own nation whose captain may require its production.

LOGAN: Ohio village, county-seat of Hocking county; on the Hocking river, and on the Columbus, Hocking & Toledo railroad; about 45 miles southeast of Columbus. It is situated in the natural gas belt, and in the vicinity of some good farm lands. Nearby is found clay suitable for pottery and bricks. Its chief manufactures are flour, furniture, brick for paving and building, pottery, foundry products, and machinery. The village owns and op-

erates the waterworks. The public library has nearly 3,000 volumes. Pop. 3,500.

LOGAN: Utah, city, county-seat of Cache county; on Logan river, and on the Oregon Short Line railroad; about 70 miles north of Salt Lake City. It was settled in 1859 and incorporated in 1866. It is located in an agricultural region with valuable mineral deposits in the vicinity. The chief industrial establishments are knitting-mills, lumber-mills, a brewery, a beet-sugar factory, and flour-mills. Some of the educational institutions are the Brigham Young College, opened in 1878 under the auspices of the Latter Day Saints; New Jersey Academy, under the auspices of Presbyterians, and the State Agriculture College. The waterworks are owned and operated by the city. The city government is, according to the act of 1898, providing for the general government of the cities of the state. Pop. (1910) 7,522.

LOGAN, *lō'gan:* 1720-80; name taken by an Indian chief, Tah-gah-jute, in honor of Gov. Logan of Penn., who had befriended him. Until Logan was about 50 years of age he lived in Pennsylvania (where his father had been a chief of the Cayugas), and was known as of a noble, brave, and friendly nature. He removed to the shores of the Ohio, 1770, and fell into habits of intemperance. In 1774 a band of lawless white murdered his family, and an insane desire for vengeance took possession of him. He devoted himself to rousing the tribes to a savage war, which raged with terrible cruelties for six years. Logan was reported to have taken 30 scalps with his own hand. When the Indians were finally defeated, Logan refused to join the other chiefs in suing for peace. The address to Lord Dunmore, governor of Virginia, which is attributed to Logan on this occasion, in Thomas Jefferson's *Notes on Virginia*, is of very doubtful authenticity; it is in the most pathetic and impressive style of Indian eloquence. Logan's end was sad. He was mastered by his vice of intemperate drink, became quarrelsome, and was killed by one of his relatives in self-defense.

LOGAN, Benjamin: American pioneer: b. Augusta county, Va., about 1752; d. Shelby county, Ky., 1802, Dec. 11. He early crossed the Alleghanies and became a settler in Kentucky. He was an associate of Simon Kenton and Daniel Boone in the Indian fighting then constantly in progress on the frontier. During the revolutionary war he was also active in the contests between the colonial frontiersmen and the British and their Indian allies. In 1776 he built one mile east of Stanford, Ky., on the site now called St. Asaph's Spring, the stockade known as 'Logan's fort.' When this fort had for weeks in 1777 been besieged by Indians, Logan made his way through the enemy's lines and traveled 150 miles to Holston, where he obtained supplies and reinforce-

ments. He participated as second in command in Colonel John Bowman's expedition against the Shawnees at Chillicothe, and led the force sent against the Indians under Simon Girty. His advance guard, through overhaste, was defeated at Blue Licks, and Logan himself did not reach the scene of battle until the succeeding day. In 1788 he commanded a force of 600 against the northwestern Indians. He was for many years a member of the Kentucky legislature; and sat also in the state constitutional conventions of 1792 and 1799. His prowess was celebrated on the frontier.

LOGAN, Celia. See Connelly, Celia Logan.

LOGAN, Cornelius Ambrosius: American dramatist: b. Baltimore, Md., 1806; d. near Wheeling, W. Va., 1853. After a varied career as actor and manager he became a theatrical manager in Cincinnati in 1840. He made a vigorous reply to Lyman Beecher's attack upon the stage from the pulpit; and wrote several successful plays, such as: *Yankee Land* (1834); *The Way of Maine; A Hundred Years Hence;* a burlesque; *The Wood Dealer.* He also wrote tales and poems.

LOGAN, George: American statesman and philanthropist; grandson of James Logan (q.v.); b. Stenton, near Philadelphia, 1753, Sept. 9; d. there 1821, April 9. He was educated in England, subsequently studied medicine in Edinburgh, where he took the degree of M.D., and afterward returned in 1779 to America. For many years he devoted himself to agricultural pursuits, which he was one of the first in America to prosecute successfully in a scientific manner. He also served several terms in the Pennsylvania legislature. At the outbreak of the French revolution he embraced with enthusiasm its democratic doctrines, and joined Jefferson and the republican party in opposition to the federalists. In 1798, the United States being then on the brink of a rupture with the French republic, he departed for France, under the idea that he might contribute to the preservation of peace. He was well received by Talleyrand and Merlin, then chief of the directory, and returned to America with the assurance of the desire of the French government to renew amicable relations with the United States. But as he had taken with him letters of introduction from Jefferson instead of passports from the state department, he was denounced by the federalists on his return as the treasonable envoy of a faction who had undertaken to institute a correspondence with a foreign and hostile power. He was coldly received by Washington and President Adams, and in the latter part of 1798, an act, known as the 'Logan act,' was passed by congress, making it a high misdemeanor for a private citizen to interfere in a controversy between the United states and a foreign country as he had done. He was subsequently elected to the United States senate, of

which body he remained a member 1801-7; and in 1810, urged by the same philanthropic motives which had induced him to visit France 12 years before, he went to England in the hope of preserving peace. In 1797 he published *Experiments on Gypsum* and *Rotation of Crops.*

LOGAN, JAMES: American colonial statesman and author: b. Lurgan, Ireland, 1674, Oct. 20; d. Stenton, near Philadelphia, Pa., 1751, Oct. 31. By his own efforts he acquired a knowledge of the chief ancient and modern languages, and in 1699, being then established in trade in Bristol, England, accepted an invitation from William Penn to accompany him to America in the capacity of secretary. In 1701, upon the return of Penn to England, he was appointed provincial secretary, and subsequently filled the office of commissioner of property, chief justice, and president of the council, discharging in the last capacity the duties of governor of the province for two years after the demise of Governor Gordon in 1736. The latter years of his life were passed at his country-seat called Stenton, in the pursuit of literature and science. His chief work, *Experimenta et Meletemata de Plantarum Generatione* (Leyden 1739; London 1747), an expansion of a paper on the growth of maize published in the *Philosophical Transactions* for 1735, was considered an important contribution to the science of botany. He was the author of two other Latin treatises of a scientific character published in Holland, of an English translation of Cicero's *De Senectute,* published in 1744 by Benjamin Franklin, and of Cato's *Distichs,* the latter in verse; and he left a variety of papers on ethics and philology. The translation of Cicero was the first original one of a classical author printed in America. His library, numbering about 2,000 volumes, was, in conformity with his desire, presented to the city of Philadelphia, and is deposited in a separate department of the Philadelphia library under the name of the Loganian library. He was a member of the Society of Friends.

LOGAN, JOHN: Scottish poet and Presbyterian clergyman: b. Soutra, Midlothian, Scotland, 1748; d. London 1788, Dec. 28. In 1773 he was licensed as a preacher, and from his eloquence and fervor in the pulpit soon became popular. In 1786, however, owing to intemperate habits and kindred reasons, he was constrained to leave the ministry and going to London, there engaged in literary work. His name is now best known in connection with that of Michael Bruce and the controverted authorship of the *Ode to the Cuckoo.* That Logan is entitled to a place among the minor poets of Scotland is sufficiently attested by his exquisite lyric, *The Braes of Yarrow.*

LO'GAN, JOHN ALEXANDER: 1826, Feb. 9—1886, Dec. 26; b. Murphysborough, Jackson co., Ill.: statesman. He received a common-school and collegiate education;

served through the Mexican war as private and 1st lieut.; was elected clerk of Jackson co. 1849; and graduated at Louisville Univ., was admitted to the bar. He was elected a member of the legislature 1852. He served four terms in the legislature; was prosecuting attorney 1853-57; was elected member of congress 1858 and 60; and resigned his seat and entered the Union army as colonel 31st Ill. volunteers 1861, Sep. He led his regiment in the battle of Belmont and the attacks on Forts Henry and Donelson; was promoted brigadier-general 1862, Mar.; commanded the 3d division 13th army corps in the n. Mississippi campaign; was promoted major-general volunteers 1862, Nov.; took part in the battles of Port Gibson, Raymond, Jackson, and Champion Hills, and the siege of Vicksburg; succeeded General Sherman in command of the 15th army corps 1863, Nov.; and was placed in command of the Army of the Tennessee on the death of General McPherson. On the fall of Atlanta, 1864, Sep. 1, he returned home to take part in the presidential canvass, and at its close rejoined the army and served in the field till 1865, Aug., when he resigned his commission. President Johnson appointed him U. S. minister to Mexico the same year, but he declined the office. In 1866 he was again elected member of congress; 1868 was a manager on the part of the house of representatives in the impeachment trial of President Johnson; 1868 and 70 was re-elected to congress; and 1870, 78, and 85 was elected U. S. senator. The republican national convention 1884 nominated him for vice-president, with James G. Blaine for president, but both were defeated in the election. While a member of each house of congress he took part in the most important debates, and delivered several speeches of great force. As soldier and legislator he was aggressive, persistent, and unyielding. He wrote *The Great Conspiracy; its Origin and History* (New York 1886), and *The Volunteer Soldier of America* (Chicago 1887).

LOGAN, Mary Simmerson Cunningham: American editor and journalist: b. Petersburg, Boone county, Mo., 1838, Aug. 15. She was married to John A. Logan (q.v.) in 1855, and since his death, in 1886, has edited *The Home Magazine*, has contributed frequently to periodicals and has been editorially associated with the *American Journal.*

LOGAN, Olive: American actress, lecturer and author: b. Elmira, N. Y., 1841, April 16. She began her career as an actress in Philadelphia in 1854; retired from the stage in 1868; since then has been a lecturer on social topics. She has published *Chateau Frissac* (1865); *Photographs of Paris Life* (1861); *Women and Theatres; Before the Footlights and Behind the Scenes: a Book about the Show Business* (1870); *The Mimic World* (1871); *Get Thee Behind Me, Satan* (1872); *They Met by Chance;* etc.; the comedy *Surf, or Life at Long*

Branch; a dramatization of Collins' *Armadale;* and a translation of Coppée's *Le Passant;* etc.

LOGAN, Stephen Trigg: American jurist: b. in Franklin county, Ky., in 1800; d. in 1880. After studying law and for a while practicing in Kentucky he removed (1832) to Springfield, Ill., and there continued in the work of his profession. He became a circuit judge in 1835; was three times (1842, 1844, 1846) elected to the Illinois legislature; and was associated as law partner with Abraham Lincoln, from 1841 to 1844. He was one of those who in 1847 framed the new constitution of Illinois; was again elected to the legislature in 1854; joined the republican party at its formation, and was a delegate to its national convention in Chicago in 1860.

LOGAN, Sir William Edmond: Canadian geologist: b. Montreal 1798, April 20; d. Castle Malgwin, Cardiganshire, Wales, 1875, June 22. He was educated chiefly in Edinburgh; was for a time a clerk in London, and afterward became manager of a copper-smelting works in Swansea. While there he devoted himself to the study of geology. In 1840 he went to Canada, and he was the chief of the Geological Survey of that country 1842-70. His writings appeared in the annual reports of the Canadian Survey; in the Proceedings of the British Association, the Geological Society, etc. He published *Geology of Canada* (1863).

LOGANIACEÆ, *lō-găn-ĭ-ā'sē-ē:* natural order of corollifloral exogens, consisting of trees, shrubs, and herbaceous plants, with opposite entire leaves, and usually with stipules, which adhere to the footstalks, or form sheaths. The calyx is 4-5 partite; the corolla hypogynous, regular or irregular, 4-5 or 10-cleft. The stamens arise from the corolla. The ovary is generally two-celled; there is one style. The fruit is a capsule, a drupe, or a berry. No nat. ord. of plants is more strongly characterized by poisonous properties, especially by Strychnine (q.v.). It includes the genus Strychnos (q.v.; and see Nux Vomica) and the Woorali Poison (q.v.). See also Spigelia.

LOGAN, Mount: the second highest peak in North America, Mount McKinley (q.v.) being first, in the southwestern part of the district of Yukon in Canada. Its height is 19,500 feet.

LO'GANSPORT: Indiana, city, county-seat of Cass county, locally known as the 'City of Bridges,' 70 miles north by west of Indianapolis, where the Eel river flows into the Wabash. The city is an important railroad centre, being entered by the Chicago, Richmond, Bradford, and Effner divisions of the Pittsburg, C., C. & St. L. railroad; the Michigan division of the Vandalia, and its 94-mile branch northeast to Butler; and by the Wabash. It is also the western terminal of the interurban line operated by the Fort Wayne & Wabash Valley Traction

Company, and the northern terminal of the line operated by the Indiana Union Traction Company. The business of the city is derived largely from its railroad shops (those of the P., C. C. & St. L. employing 1,000 men, the largest industry), from its manufactories, and from the surrounding agricultural region, the chief products being wheat, corn, oats, and small fruits. An important industry is the Western Motor Works, manufacturers of automobile and other motors, and gray iron, brass, and aluminum castings. Kenneth quarries, two miles west of the city limits on the north bank of the Wabash, furnish large quantities of crushed limestone. Logansport has two national banks, one state bank, and one trust company, with a combined capitalization of $650,000, and one private bank not capitalized. The city has 16 Protestant and three Catholic churches. Its educational facilities are embraced in the Logansport Business College, Holy Angels' Academy (R. C.), a high school, and 8 ward schools, in addition to the Catholic and Lutheran parish schools.

The most important public institution is the Northern Indiana Hospital for the Insane, comprising 34 buildings, and 300 acres of land, at a total cost of $724,164.76, and opened 1888, July 1. Saint Joseph's Hospital (R. C.), the Home for the Friendless, the Orphans' Home, the Carnegie Library erected in 1904 at a cost of $35,000, the Federal building completed in 1905 and costing $75,000, and the Masonic Temple, are among the more prominent institutions. The city also has three parks. Logansport was named after Captain Logan, a Shawnee chief, killed by the Indians in 1812, Nov., near the Maumee river, and was first written Logan's Port. The first permanent settlement was made in 1826, Aug., by Alexander Chamberlain, who erected a log cabin on the south bank of the Wabash, directly opposite the mouth of the Eel river. It was incorporated as a town 1831, Sep. 5; as a city, 1838, Apr. 3. Its elective officers consist of a mayor, judge, clerk, and treasurer, each for four years, ineligible for two consecutive terms; and seven councilmen, one from each of the five wards, and two at large. The city also owns and operates its own electric light and water plant. Pop. (1910) 19,050.

LOGARITHMIC CURVE: the curve whose abcissas are proportional to the logarithms of the corresponding ordinates. The equation of such a curve is $x = a \log. y$ (a being a constant). The curve has the property that as x increases the arithmetic progression, y increases in geometric progression. Also since $ydx/dy = a$ the subtangent has the same value a for all points of the curve. Another property of the curve is that the area between any two ordinates is equal to the difference of the ordinates multiplied by a. All the curves $x = a \log. y$, for different values of a are also included in the system $x = \log._b y$ for different bases b of the logarithms.

LOGARITHMIC SPIRAL: the curve described by a point which moves along a uniformly revolving straight line with a velocity proportional to its distance from the fixed point of the line. Its equation in polar co-ordinates is $r = c\,e^{a\theta}$. It cuts all the radii through the origin at a constant angle, whose tangent is $1/a$. When $a = 0$ the spiral becomes a circle. The evolute of the spiral is an equal spiral. Newton showed that if the force of gravity had varied inversely as the *cube* of the distance the paths of the planets would have been logarithmic spirals.

LOGARITHMS, n. plu. *lŏg'ă-rĭthmz*, LOG'ARITHM, n. sing. *-rithm* [Gr. *logos*, a word, a ratio; *arithmos*, number]: a system of numbers used to facilitate computation. LOGARITHMIC, a. *lŏg-ă-rith'mik*, pertaining to logarithms. LOGARITHMICALLY, ad. *-lĭ*. The fundamental idea of logarithms is to replace the operation of multiplication by addition, by expressing the factors as forms of 10 (or other convenient *base*), whereupon the multiplication is effected by adding the exponents. Thus $100 = 10^2$, $1000 = 10^3$; then $100 \times 1000 = 10^5$. Tables have been computed expressing every number as a form of 10. The index of the power is called the *logarithm* of the number. To multiply two or more numbers together, it is only necessary to look up their logarithms in the table, add them together, and look up the number corresponding to their sum. The tables, of course, give the logarithms only to a certain number of decimal places; four places suffice for many calculations, while seven are required for the accurate measurements of geodesy. Since $10 = 10^2$, log. $10 = 1$; hence multiplying a number by 10 merely adds 1 to its logarithm but does not affect its decimal part. Thus log. $2 = 0.301030$, then log. $20 = 1.301030$, log. $200 = 2.301030$. The decimal part of the logarithm is called its *mantissa*, the integral part its *characteristic*. The former is the same for all numbers which have the same digits; the latter depends on the place of the decimal point in the number. Thus the logarithms of 213.27 and 2.1327 are respectively 2.328929 and 0.328929. Numbers between 1 and 10 have the characteristic 0, between 10 and 100 the characteristic 1, between 100 and 1000 the characteristic 2, etc. For decimals less than 1, the characteristic is negative and equal to the place of the first significant figure. A table of logarithms gives only the mantissas, the characteristics being supplied as explained above. Tables are usually computed with 10 as a base. But in higher mathematics all logarithms are taken to the base

$$e = 1 + 1 + \tfrac{1}{2} + \tfrac{1}{3\cdot 1} + \tfrac{1}{4\cdot 1} + \tfrac{1}{5\cdot 1} + \cdots$$
$$= 1 + 1 + 0.5 + 0.16666 + 0.04166 + 0.00833 + \cdots$$
$$= 2.171828 +,$$

which is called the *natural* base; such logarithms are called *natural* logarithms. Tables have also been computed for the logarithms of the trigonometric functions, sine, cosine, tangent, etc., and for other classes of func-

tions. Such tables are in constant use by computers, engineers, and astronomers. The computation of a complete table would be an arduous task, but the logarithm of any particular number can be rapidly computed by means of the sines

$$\log._{10}\frac{2+1}{2}=0.868590\left(\frac{1}{22+1}+\frac{1}{3(22+1)3}+\frac{1}{5(22+1)5}+\cdots\right).$$

A number of logarithms having been found, others can be got by *interpolation*, and there are various methods of abridging the labor. The tables that we possess have all been transcribed with repeated revision from the original ten place table (1628) of Adrian Vlacq, which contains the results of Henry Briggs's *Arithmetica logarithmica* of 1624.

By the end of the 16th century trigonometric computations had become so extensive and complicated that several mathematicians were at work to devise means of shortening them. The invention of logarithms is usually ascribed to John Napier, Baron Merchiston (1550-1617) (q.v.), whose *Canon mirabilis logarithmorum* appeared in 1614. Napier drew inspiration from John Speidell, and was anticipated by Jobst Bürgi, who, however, delayed publication of his results until after Napier had published his. Napier's tables gave only logarithms of sines, cosines, and other functions of angles. His system was a complicated one. To compare it with the present system it is necessary to divide both his numbers and his logarithms by 10^7. The resulting system has then the base e^{-1}; correspondingly his logarithms decrease as the numbers increase. It was Henry Briggs (1560-1630) (q.v.), Sarilian Professor of Geometry at Oxford, who remedied these defects by suggesting the use of 10 as a base, and who at once set about the actual computation with such energy that he had calculated 30,000 logarithms of numbers to ten places, a table of sines to fourteen places, and a table of tangents and secants to ten places before his death. The value of Napier's great discovery was immediately recognized by Kepler, and the use of logarithms spread rapidly through Europe. The discovery of the Calculus fifty years later helped to simplify the theory and added to it the explicit use of the natural base e for theoretical purposes.

Among the historic tables of logarithms may be mentioned those of Vlacq, Vega, Bremiker, Callet, Lelande, and Bruhns. Very accurate and convenient tables are now issued by nearly every publisher of mathematical books, and are usually accompanied by clear directions for their use.

LOGGATS, n. plu. *lŏg'găts* [Dan. *logre*, to wag the tail: prov. Sw. *loka*, to work a thing to get it loose]: in *OE.*, an old game, something like nine-pins and skittles.

LOGGER-HEAD, n. *lŏg'gĕr-hĕd* [Dut. *log*, unwieldy, heavy, and Eng. *head:* Low Ger. *luggern*, to lie lazily in bed: comp. Gael. *loigear*, a rough, doltish person]: a

dunce; a blockhead; a species of sea-turtle. AT or TO LOGGER-HEADS, quarrelling; disputing. *Note.*—See LOG, timber: *log-head* is the same in sense as *block-head; logger* is one engaged in cutting down and preparing *logs* of timber.

LOGGIA, n. *lŏj'â*, LOGGIE, n. plu. *lŏj'ĕ* [Italian]: open arcade, inclosing a passage or open apartment. It is a favorite class of building in Italy and other warm countries. The Loggia de' Lanzi at Florence is one of the finest examples extant; and well-known are the Loggie of the Vatican, arcaded passages round the interior of the cortile of the palace, ornamented with beautiful paintings and arabesques by Raphael and his pupils.

LOGIA, n. *lŏg'ĭa* [Gr. *logia* (plu. of *logion*), announcement, oracle; Fr. *logos*, word]: sayings of the Lord Jesus; supposed by some to have formed the content of a body of oral tradition; believed by others to have been contained in a gospel now lost, but extant when Matthew's gospel was written (see Acts xx. 35). On 1897, Jan. 11, Messrs. Bernard P. Grenfell and A. S. Hunt on behalf of the Egypt Exploration Fund found at the ancient Oxyrhyncus, near the modern Behnesa in Egypt a leaf of papyrus, since assigned by experts to the end of the 2d or beginning of the 3d c., and containing the Greek text of 8 alleged 'logia' or sayings of Christ, each introduced by the formula 'Jesus saith.' Of these 3 are in the canonical gospels, 3 are wholly new, while 2 are illegible. This leaf is the oldest extant record of words spoken by Christ on earth—from 100 to 150 years earlier than the two oldest MSS. (Vatican and Sinaitic) of the N. T., and is conjectured by some to have formed part of a volume from which our present gospels may have been derived. See AGRAPHA.

LOGIC, n. *lŏj'ĭk* [F. *logique*, the art of logic—from L. *logĭca:* Gr. *logĭkē*, with *technē*, understood, the art of reasoning; *logos*, speech, reason]: scientific examination and account of that part of reasoning which depends on the manner in which inferences are formed; and of general maxims and rules for constructing arguments, so that the conclusion may contain no inaccuracy which was not previously inserted in the premises; it is the science of the laws of thought, as thought; the art of using reason well in our inquiries after truth, and in our communication of it to others. LOGICAL, a. *lŏj'ĭ-kăl*, according to the rules of logic; founded on reason; clear; rational; discriminating. LOG'ICALLY, ad. *-lĭ*. LOGICIAN, n. *lō-jĭsh'ăn*, a person skilled in logic.

LOGIC: the science of inference; a scientific account of the principles and methods of valid thinking, i.e., of the general conditions by conformity to which thinking arrives at true propositions. The theory of every operation is later than its performance, and men were accustomed to think correctly long before they began to reflect

upon their thinking faculties and the processes by which their results were reached. The attention which Socrates gave to the meaning and justification of general names, is signalized by Aristotle as the beginning of logical theory. It was Aristotle, himself, however, who first elaborated the idea of the science, and defined its sphere by separating it from the metaphysical questions with which logical discussions are always associated in his predecessors. The six treatises afterward collected under the name *Organon* contain the gist of what is still taught as formal logic; but the term logic was probably used first by the Stoics in the wide sense with which we are familiar. Aristotle himself possessed no single name for the science. Aristotle recognized the difference between the methods of proof and inference which, starting from general truths or concepts, make deductions in regard to more particular truths, and the methods by which general principles are derived by induction from particular facts. But, because of the very imperfect state of empirical science in his day, he gave a much more complete account of the deductive process of thinking than of induction. Under the name of Pure or Formal Logic Aristotle's theory of deductive inference has persisted, almost unchanged, to the present day. The meaning of this designation is that logic, as such, takes no account of the *matter* of our reasonings—i.e., of the things reasoned about; it deals solely with the *form* or skeleton of the reasoning process itself. Thus, if we say, 'Englishmen are white-skinned,' logic has no occasion to consider the truth of this statement as a matter of fact or science; it deals only with the form of the proposition or judgment as a general logical mold into which any pair of notions may be fitted. It treats the proposition, in short, only so far as it is expressible in the form 'X is Y.' To this abstraction from all questions regarding the adequacy of our notions and the material truth of our assertions, formal logic owes its completeness as a science. It looks on thought not as the expression of the truth of things, but as a series of mechanical operations, and its aim is to lay down the general or symbolic forms which these operations must assume in order to insure that the end shall be consistent with the beginning. It is apparent, then, that in any reasoning process, formal logic guarantees that the conclusion is true only *if* the premises from which the start was made were true. It has accordingly been called the logic of consistency, as opposed to induction, which seeks to be a logic of reality. Pure logic takes its material ready-made from the hands of observation, and merely watches over its correct manipulation. Reasoning in the strictly formal sense is, in fact, primarily analytic; the conclusion only brings to explicit consciousness what was implied or involved in the premises. Formal logic is thus, in its most general aspect, an application, by means of many

subordinate rules, of the laws of identity and non-contradiction. Practically, however, it is of great service in clarifying the thought of the individual, though—or more strictly, because—in a sense merely teaching him what he knows already.

Formal logic is usually treated under the three heads of Concepts, Judgments, and Reasonings; or, if regard be had to the verbal expression of thought, the Concept, Judgment, and Reasoning appear respectively as Term, Proposition, and Syllogism. Though pure logic has strictly nothing to say about the formation of general names or the adequacy of our notions, it is customary for logical writers to expound under the first head the nature of generalization and definition—the processes by which our actions are formed and tested. The Judgment, however, may be taken as the unit in logic, for it is only in their relation as subject and predicate of a judgment that concepts become susceptible of logical treatment. The combination of two judgments (involving three notions), in such a form that a third judgment is deduced from them, constitutes a Syllogism. Pure logic demonstrates the reducibility of the most complex reasonings to a succession of variations on this fundamental type. As an appendix to this exposition of the normal forms of inference, there follows a discussion of the different classes of fallacies to which any deviation from them may give rise. It is in this aspect that logic justifies its claim to be 'a cathartic of the human mind.' For, like ethics, logic is a normative science; i.e., it does not like the physical sciences, or like psychology, simply generalize facts. Its laws are not statements of what always happens, but rules of what ought to be done. This distinction contains the answer to the question, at times much debated, whether logic is a science or an art. Logic is primarily a science, but one which has a practical side, since it prescribes principles to which thinking must conform in order to be true.

Formal logic, in its traditional procedure, tends to treat thought simply as a process of subsumption or comparison of the extension of terms. The consideration of this procedure has led a number of recent logicians (chiefly English) to attempt an extension of Aristotle's scheme by a thorough-going application of the notion of logical quantity. Thus Sir W. Hamilton maintained that the relation between subject and predicate in a proposition is that of logical equation. The proposition, 'All men are mortal,' means, when fully expressed, 'All men are some mortals.' If the predicate be thus explicitly quantified, it is evident that we may substitute for the copula the algebraical symbol of equation. For the consequences of this view in the multiplication of propositional and syllogistic forms, see QUANTIFICATION OF PREDICATE. This line of thought has been further worked out by William Stanley Jevons, who defines in-

ference as 'the substitution of similars.' He would make the proposition run—'All men are mortal men' (All *a* is *ab*). This quantitative or exact treatment of logical process has been worked out in other ways (by De Morgan, Boole, Pierce, L. Schroeder, Peano, B. Russell, et al.). By the formulation of a set of axioms or 'indefinables,' and, by the use of symbols analogous to those of Algebra, it has been attempted to set up a calculus or universal method of logical operations. This theory is variously called the Algebra of Logic, Symbolic Logic, or, sometimes, Mathematical Logic. The last named is unfortunate, since logic is not a department of mathematics. Pure mathematics is rather to be regarded as a special branch of logic. Symbolic logic takes account of certain types of formal inference which cannot be brought within the traditional forms. More than this, it affords an interesting and valuable exercise, especially in its bearing on mathematics. But, as a formal theory of thought, it is much more complicated, rigid, and mechanical than the traditional logic, and of less general utility and educational value. No logic which operates by the law of pure identity or the numerical equating of subject and predicate can give an adequate account of actual thinking; for, in science and practical affairs, thought works effectively by the discovery of similarities among diverse objects. Numerical equations are neither the most frequent nor the most important achievements of thought.

Bacon is commonly regarded as the founder of Inductive Logic. He put himself at the head of the revolt against the scholastic logic which marked the men of the Renaissance, and, though his own apprehension of scientific method was gravely defective, his eloquence and his position made him the most influential prophet of the scientific movement which Galilei and others had initiated. In fact, he came to supplement the old, not to supersede it; but he allowed his dislike of the abuses of the Aristotelian logic to carry him away into indiscriminate denunciation. Bacon's animus is perhaps excusable as the zeal of the reformer; and it may be granted that in the Aristotelian logic, as in Greek philosophy generally, there is a tendency to let the study of words usurp the place of the investigation of facts. The middle ages had exaggerated this tendency by habitually assuming the distinctions existing among things to be correctly and adequately rendered by traditional names. Beyond this, Bacon's diatribes against 'syllogism' (q.v.) show misapprehension of the real function of formal logic, which, as has been seen, makes no pretensions to be an instrument of scientific discovery. Inductive theory has received many developments since the time of Bacon, notably at the hands of J. S. Mill. The progress of science has made it easier to formulate its methods and to determine the conditions of valid scientific proof. It

is sufficient here to point out that, whereas in formal or deductive logic reasoning proceeds from a whole to the particulars included under that whole, we seem in inductive logic to rise, in reliance on the uniformity of nature, from observation of particulars to the enunciation of a universal proposition. See INDUCTION.

In the actual movement of thought, induction and deduction are both involved. Some sciences, e.g., mathematical physics, are almost wholly deductive, while others, e.g., psychology, are almost purely inductive. But all sciences that have to do with the world of fact involve both processes. It is a mistaken view to treat deduction and induction otherwise than as two complementary phases of the movement of thought. Fact and law, particular and general, do not exist apart from one another. For a complete view of logic thought must be treated as an organic unity, traceable throughout the various forms and stages of thinking. Starting from Kant, Hegel, Lotze and Sigwart in Germany and Bradley and Bosanquet in England have especially contributed to this more comprehensive theory of thought. REAL LOGIC, logic of reality or metaphysical logic. Hegel's logic is of this type. PURE LOGIC, sometimes used to emphasize the independence of logic as contrasted with psychology of cognition. See, besides writers above named, Abp. Whately, H. L. Mansell; also of American writers, J. E. Creighton, J. G. Hibben, and J. Dewey.

LOGISTICS, n. plu. *lō-jĭs'tĭks* [Gr. *logis'tĭkos,* skilled in calculating—from *logos,* a word, a number; *logistēs,* an accountant]: name given by the Greeks to the art of computation which they distinguished from their 'arithmetic,' the latter term being applied by them to the theory of numbers; in *mil.,* the art of moving troops, in which is comprised the details of marches and the fixing of places for encampments and cantonments.

LOGOGRAM, *lŏg'o-grăm* [Gr. *logos,* a word; *gramma,* a letter]: simply a complicated or multiplied form of the Anagram (q.v.), where the puzzle-monger, instead of contenting himself with the formation of a single new word or sentence out of the old, by transposition of the letters, racks his brain to discover all the words that may be extracted from the whole or from any portion of the letters, and throws the whole into a series of verses in which synonymic expressions for these words must be used. The puzzle lies in ascertaining what the concealed words are, and through them, what is the primary word out of which they have all been extracted. A specimen is given in Henry B. Wheatley's book on *Anagrams* (1862), in which, out of the word 'curtains,' no less than 93 smaller words are framed.

LOGOGRAPHERS, *lō-gŏg'ra-fĕrz:* name by which the Greeks designated the historians previous to Herodotus. The logographers described in prose the mythological

subjects and traditions which had been treated of by the epic poets, supplementing them by traditions derived from other quarters, so as to form, at least in appearance, a connected history; their works, however, seeming to be intended rather to amuse their readers, than to impart accurate historical knowledge. The term logographers was applied also to those orators who composed judicial speeches or pleadings, and sold them to those who required them. Ionia was the home of the first Greek prose and a large number of the logographers were Asiatic Greeks. The latter part of the 6th century B.C. marks the beginning of the period of logographers, and there were straggling representatives of the class down to the time of the Peloponnesian war. The meager fragments remaining of their writings are preserved in Müller's *Fragmenta Historicorum Græcorum* (1856).

LOGOGRAPHY, n. *lō-gŏg'ră-fĭ* [Gr. *logos,* a word; *graphē,* a writing]: a method of printing in which a type represents a word instead of a letter. LOGOGRAPHIC, a. *lō'gō-grăf'ĭk,* or LO'GOGRAPH'ICAL, a. *-ĭ-kăl,* pertaining to logography.

LOGOGRIPH, n. *lŏg'ō-grĭf* [Gr. *logos,* a word; *griphos,* a puzzle]: a word-puzzle in which the original word is to be discovered from various significant combinations of the letters found in it—thus, given the words *tale, teal, peat, peal, pale, leap, late,* find out that *plate* is the original word.

LOGOMACHY, n. *lō-gŏm'ă-kĭ* [Gr. *logomachĭă*—from *logos,* a word; *machē,* a fight, a contest]: contention about words; a war of words: also, a game contested by the players, in which words are composed out of the letters in a given word.

LOGOMANIA, *lŏg-o-mā'nĭ-a* or *lō-gō-mā'nĭa:* name sometimes given to a class of diseases of the faculty of language; including a variety of symptoms, such as forgetfulness of the word or sound properly representative of the idea, muteness, or (in contrast) rapid utterance of unmeaning words or sounds. The term is seldom used.

LOGOMETRIC, a. *lŏg'ō-mĕt'rĭk* [Gr. *logos,* a word, a ratio; *metron,* a measure]: denoting a scale to measure or ascertain chemical equivalents.

LOGONE, *lō-gōn':* a tributary state of Bornu, Central Sudan, Africa, southeast of Lake Chad, between Bornu and Baghirmi. The country consists for the most part of a well-wooded plain. The natives, who are estimated to number 250,000, are vassals of Bornu, but are self-governing; they are related alike to the Musgu and the Makaris; and their language is said to have affinity with Hausa and Galla.

LOGOS.

LOGOS, *lŏg′os* [Gr. from *legō*, I speak]: Greek word, signifying the *word* or outward form by which the inward thought is expressed; likewise, the inward thought or reason itself (comp. Lat. *ratio* and *oratio*). It may be said to include in its meaning, the act of speaking; that which is spoken; the natural process gone through for the purpose of the formation of speech; the reasoning powers themselves:—all the attributes and operations of the soul as manifested by the spoken word. It thus occurs in the classical writers under the manifold significations of word or words, conversation, oration, exposition, command, history, prose, eloquence, philosophical proposition, system, reason, thought, wisdom, and the like. These significations may be classed as pertaining to the Hellenic or metaphysical usage of the term. Theologically, in the Christian Church from the days of the apostles, the term Logos took a meaning essentially Hebrew, being developed from the Old Testament presentation of God as manifesting Himself to Adam, to the Patriarchs, to Moses, to David, and all the prophets, under some human personalization. As the covenant God, the God active in creation and present in history, He was considered as revealing Himself and exerting His power through His *Word*, through whose mediation also His eternal wisdom came into activity on the field of man and the world. Thus, while in Greek speculative philosophy, Logos meant *Reason* as the eternal force or agent which was the original of all things, to the Church of Christ inheriting the Hebrew Revelation and the Hebrew thought, it meant *The Word* as the eternal expression and the precise personal manifestation of God.

Theologically, the word *Logos*, as occurring at the beginning of the gospel of John, was unhesitatingly referred to Jesus Christ as God manifest in the flesh. Indeed the apostle distinctly declares this reference.

It is interesting to observe however as regards the various Oriental nations, that the notion of a certain manifestation or revelation out of the being of God—which manifestation, as a more or less personified part of the Deity, stands between the realms of the infinite and finite, of spirit and matter—has from times immemorial been the common property of the whole East. It is found expressed in the religions of the primitive Egyptians, as well as in those of the Hindus and Parsees. This personalization of Deity as '*Word*' or '*Wisdom*,' found its way, chiefly from the time of the Babylonian exile, into the heart of Judaism, which not readily reconciling it with the fundamental Hebrew idea of the Divine Unity, dealt with it after the manner of the apocryphal writers, who pointed chiefly to the 'Wisdom' —of which Solomon (Prov. viii. 22) says that it had dwelt with God from the beginning; and Job (xxviii. 20), that it had had its office in the work of creation.—The writers of the Apocrypha seem to have considered

it *the* emanation of God, which emanation was supposed to be bodily to a certain, however minute, degree. Thus, Sirach (xxiv. 1, 23) understands the 'Spirit of God' (Gen. i. 2) to be a kind of veil or mist, and speaks (i. 1, 9) of the 'wisdom that is of the Lord and is with the Lord, everlasting,' and that 'it was *created* before all things, and known unto Him' (ib.).

This *Wisdom*, or *Word* of creation, which, according to Sirach's view, formed and developed the chaos, further manifested itself—visibly—by a direct and immediate influence upon one select people, Israel, through which it wished further to influence all mankind. A nearer acquaintance with this doctrine in all its bearings at once solves the old riddles of certain Targumic interpretations, which have puzzled a host of investigators. Thus versions like that of Targum Jerushalmi to Gen. i. 1, 'With *Wisdom* God created heaven and earth,' and the constant use of the term *Memra* (Word) instead of *God* or *Jehovah* becomes clear at once (see TARGUM: VERSIONS). No less must many passages in the Talmud and Midrash assume an entirely different aspect when that prevalent Jewish mode of thought and speech is taken into consideration.

In the earlier Platonic schools (to turn again to the Hellenic philosophy) Logos, i.e., the Logos of God, was the common term for 'System of the Cosmos' or 'Divine Reason,' inherent in the Deity. The later Greek schools, however, more prone to symbol in philosophical matters, called Logos a 'Hypostasis of Divinity,' a substance, a divine corporeal essence as it were, which became outwardly visible—a separate Being, in fact, which, created out of the Creator, became 'the Son of the Creator.' These gropings of the ancient Pagan mind illustrate the need which human thought must always feel of some doctrine of the Logos to bridge the chasm in speculation between Creator and created, between the Infinite and finite.

The Judæo-Alexandrine views on this point, and especially those of Philo (a Hellenized Jew, b. about B.C. 25) their best representative, have by some writers been thought to cast the most important light on the usage of the word Logos in John's gospel. This is a misapprehension which vitiates all judgment of the Johannine Logos, and no less of the Old Testament doctrine which was developed in the gospel. The terms used by the two writers are indeed similar, for both inherited the same phraseology; but Philo's thought is essentially Pagan; his Logos is distinctively reason, not distinctly personal, not the incarnation of God, and is useful chiefly as a metaphysical term in speculation. John contemplates in the Logos not reason but word—The Word, most personal, the full incarnation of God, no term in philosophy, but the Redeemer of Man. Philo's views are briefly as follows. He makes the Logos the all-comprising essence of spiritual powers (Daimons,

Angels), which alone acts upon the universe. In this sense, the Logos stands as the *Divine Reason*, the *Power of all Powers*, the *Spirit of God*, and His *Representative*, between Him and all else. This divine principle he personifies as the *Archangel*, who executes the behests of God to man; the *Highpriest*, who prays for man; in this showing the influence of a Hebrew element; and he finally speaks of Logos as 'the second God' (*De Somn.* i. 655), and the 'Providence' (Fate, Fortune) which watches over the destinies of mankind and separate nations (*Quod Deus*, i. 298); in this showing the influence of Pagan and polytheistic thought. These conceptions, which, he says, came to him in a trance, he does not allow, however, to be in the least derogatory to the strictest belief in the oneness, invisibility, and pure spiritualness of God, as taught in the Jewish creed.—This characterizes sufficiently the general vagueness and haziness of philosophical and theological parlance and speculation in the Alexandrine schools, which, obviously unconscious of the palpable contradictions uttered in one breath, mixed up pure thought and visions, Scripture with eastern and western philosophy and theosophy, monotheism and polytheism, heaping systems upon systems and dreams upon dreams.

Some Christian writers have identified the Logos of John with 'doctrine;' and a notion (held by Calvin and Luther and some others) would make it equal to monologue, the Deity in conversation with Himself. Not entering into a philosophical discussion of the great truth which the word Logos at once veils and reveals, we may quote these fitting words—'The heart of John's doctrine of the Logos is the historical fact that the Word was made flesh.'

For the person of the Logos as the mediator (Æon, Demiurgos, etc.), and the respective relation between him and the other divine Personalizations, see GNOSTICS; TRINITY; CHRIST.

LOGOTYPE, n. *lŏg'ō-tīp*, n. [Gr. *logos*, a word; *tupos*, a mark impressed, a stamp]: a type embracing a word; two or more letters cast in one piece.

LOGWOOD, *lŏg'wûd*, or CAMPEACHY WOOD, *kăm-pē'-chē wûd:* dark red solid heart-wood of *Hæmatoxylon Campechianum*, a tree of nat. ord. *Leguminosæ*, sub-ord. *Cæsalpineæ*. This tree grows in Mexico and Central America, and is perhaps a native of some W. India Islands; but is said to have been introduced into Jamaica in the beginning of the 18th c., though it is now naturalized there. The best qualities are brought from Campeachy, though only in small quantity. It is the only known species of its genus. It grows to a height of 20—40 ft.; the leaves are pari-pinnate; the racemes many-flowered, and longer than the leaves. The sapwood is yellowish, and being worthless, is hewed off with the bark. The heart-wood is heavier than water, close-

grained, but rather coarse. It has a slight smell, resembling that of violets, a sweetish taste, is astringent, and contains a distinguishing crystalline principle, called *Hæmatoxylin* (see under HÆMATOXYLON).

Dye-wood is exported in large quantities in billets or logs, usually about 4 ft. in length, 18 inches in diameter, and of very irregular shape; the larger they are, the greater their value; the color is a dark blood-red, becoming almost black after long exposure. The infusion of the wood is also blood-red, which color it yields readily to boiling water; it is changed to light red by acids, and to dark purple by alkalies. In dyeing with logwood, an alum mordant gives various shades of purple and violet—with the solution of tin, it gives violet, red, and lilac; with the sulphate or acetate of iron, it gives a black; but this is greatly improved in depth and softness, if, as is common, gall-nuts also are used. It is also one of the ingredients in both black and red ink; but Brazil-wood is usually preferred for the red.

LOIN, n. *loyn*, usually in the plu. LOINS, *loynz* [OF. *logne;* F. *lombes*, loins—from L. *lumbus*, a loin: comp. Gael. *luain*, the loins; *lion*, to propagate]: the lower or hinder half of the trunk of an animal; the lower part of the back; the reins. LOIN, n. *loyn*, the joint of an animal as cut for food, as a *loin* of mutton, a *sirloin* of beef.

LOIRE, *lwâr* (anc. *Liger*): longest river in France; rising in the Cevennes Mountains, near Gerbier-des-Joncs, dept. of Ardèche, 4,550 ft. above sea-level, flowing n.n.w. through the centre of France as far as Orleans, where it bends to the s.w. as far as Tours, and thence follows a generally w. course to its embouchure in the Bay of Biscay; length, 626 m. It becomes navigable for small boats a little above Roanne, 450 m. from the sea. Formerly the depth at its mouth was 18 ft. at ebb-tide; now, it is only 6 to 9 ft. Ships can ascend to Nantes, 33 m.; though for half the year navigation is impracticable. The lower course of the Loire is adorned by wooded islets. In its lower part, large dikes or *levées* have been built, to protect the surrounding country from inundations, from which, however, it sometimes suffers terribly. It receives about 40 affluents, of which the principal are, the Loir, on the right; and the Allier, the Cher (length 98 m.), the Indre (152 m.), and the Vienne (231 m.), on the left.

LOIRE: department in the s.e. of France, formerly part of the province of Lyonnais. It comprises the arrondissements of Montbrison, Roanne, and St. Etienne. The basin of the Loire, which flows through this department, is a rather unfruitful valley, but the mountains are rich in iron and lead, and the coal-fields of the department are the richest in France. Loire is noted for rearing of silkworms, and for the excellence of its silk

manufactures. The weaving of hemp and linen is largely carried on. Its mineral springs are in great repute, especially those of St. Alban, Sail-sous-Couzan, and St. Galmier. The chief towns are St. Etienne, Roanne, Rive-de-Gier, and Montbrison. Pop. (1901) 37,981.

LOIRE, HAUTE, *ōt:* central dept. of France, bounded s. by the depts. of Lozère and Ardèche; 1,212,160 sq. acres. The surface is mountainous; covered by the Cevennes, the Cantal Mountains, and the Margaride chain, whose slopes are clothed with forests, and whose peaks are during about half the year covered with snow. Chief rivers, the Loire and the Allier. The soil of the plains is fertile, and the agricultural product of the usual crops and fruits is abundant. The climate is very various, owing to the irregularity of the surface; the winters in most parts are long and rigorous. The arrondissements are Le-Puy, Yssengeaux, and Brioude; cap., Le-Puy. Pop. (1901) 314,058.

LOIRE-INFÉRIEURE, *lwâr-ăng-fā-rē-ėr':* maritime dept. in w. France, formed out of the s. portion of the old province of Brittany, on both sides of the river Loire, and comprising the arrondissements of Nantes, Ancenis, Paimbœuf, Châteaubriant, and Savenay, 1,697,979 English acres. In the s. of the dept. lies Grand-Lieu, largest lake in France, 27 sq.m. The interior is, on the whole, flat, but the n.e. and s.e. are slightly hilly. The soil is fertile, producing wheat, rye, and barley, and forming in some parts rich pasturage. There are some fine forests. Salt marshes are numerous in the west. The vineyards yield annually about 32 million gallons of wine. Ship-building is carried on extensively at Nantes. The coast-fisheries and general export trade of the dept. are extensive. Cap., Nantes; none of the other towns are large. Pop. (1901) 664,971.

LOIRET, *lwâ-rā':* central department of France, formed out of the e. portion of the old province of Orleannois, and comprising the arrondissements of Orleans, Montargis, Gien, and Pithiviers; on both sides of the river Loire. The country is, for the most part, an elevated and fruitful plain, abounding in corn and wine —known as the plateau of Orleans, but the district along both banks of the Loire, called the *Sologne,* is a barren, sandy tract. Loiret contains several large forests. Cattle, sheep, and bees are extensively reared, and mineral springs are numerous. Pop. (1901) 366,660.

LOIR-ET-CHER, *lwâr-ā-shär':* department of France, on both sides of the river Loire, formed of part of the old province of Orleannois; comprising the arrondissements of Blois, Vendôme, and Romorantin. The department is almost a uniform plain, broken only by vine-hills of slight elevation. The n. part is more fertile than the s., three-fourths of which is occupied by marshes, heaths, and forests: the last indeed cover one-sixth of

the entire surface. The chief products are corn, fruits, hemp, wine, and vegetables of all sorts. The rearing of sheep, poultry, and bees, is carefully attended to; and there are manufactures of woolens, cottons, leather, glass, etc. Principal towns, Blois, Romorantin, and Vendôme. Pop. (1901) 275,538.

LOITER, v. *loy'tėr* [O.Dut. *loteren*, to delay; *leuteren*, to linger: Swiss, *lottern*, to joggle: Bav. *lotter*, a lazy or loose-living man: Fin. *lotto*, anything dangling: Low Ger. *luddern*, to be lazy]: to linger; to be slow in moving; to spend time idly; to saunter. LOI'TERING, imp.: ADJ. lingering; moving slowly. LOITERED, pp. *loy'tėrd*. LOI'TERER, n. *-tėr-ėr*, one who delays; an idler. LOI'TERINGLY, ad. *-lĭ*. SYN. of 'loiter': to delay; lag; tarry; dally.

LOK, n. *lŏk*, or LOKI, n. *lō'kĭ* [Icel. *loki*—from *loka*, to allure: Ger. *locken*, to allure: comp. Gael. *lochd*, evil, mischief]: in Scandinavian mythology, a demi-god, not of the race of the Æsir (see ASES), but of an older dynasty. Nevertheless he was from the very first on terms of intimacy with Odin, and received among the Æsir. His appearance is beautiful, and he has great knowledge and cunning. He often brings the new gods into difficulties, from which, however, he again extricates them. Hence he is to be regarded as the principle of strife and disturbance in the Scandinavian mythology; the 'Spirit of Evil,' mingling freely with, yet essentially opposed to, the other inhabitants of the Norse heaven, analogous to the Satan of the Book of Job. By his artful malice, he caused the death of Balder (q.v.), and was in consequence visited by the Æsir with most terrible punishments. He is sometimes called Asa-Loki, to distinguish him from *Utgarda-Loki*, a king of the giants, whose kingdom lies on the uttermost bounds of the earth; but these two are occasionally confounded. It is quite natural, considering the character of Lok, that at a later period he should have become identified with the Devil of Christianity, who is called in Norway, to the present day, *Laake*.

LOKMÂN, *lŏk-mân'* (ABU AMAN?), a fabulous personage; the supposed author of a certain number of Arabic fables. He is by some Arabic writers called a nephew of Job or Abraham; by others a councilor of David or Solomon; but Derenbourg has almost conclusively identified him with Balaam, whose name signifies like that of Lokmân, the *Devourer*. Jewish tradition supports this theory; but the Jewish influence seems not to have originated but only modified the Arabic tradition. His native place and occupation are uncertain. Thus, he is variously held to have been an Ethiopian slave, conspicuous for ugliness; a king of Yemen; an Arabic tailor; a carpenter; a shepherd; etc. Probably, the circumstances and sayings of several men living at

different periods have been fathered upon Lokmân. Arabian legend distinguishes this Lokmân, known as The Sage, from an older Lokmân, said to have built the famous dike of Ma'rib. In the Koran, Mohammed (Surah 31) says of Lokmân the Sage that to him 'has been given the *Wisdom.*' There is also a great likeness to be recognized between Lokmân and his fables and Æsop and those current under the latter's name. According to the Arabic writers, to Lokmân, as the Ideal of Wisdom, the kingdom of the world was offered, but was by him declined—provided this was no offense against piety—because he felt much happier as he was; and that when asked what was the secret of the goodness and wisdom of all his deeds, he replied: 'It is this: I always adhere to the truth; I always keep my word; and I never mix myself with other people's affairs.'

The fables that go by Lokmân's name are for the most part Indian apologues, rendered first into Greek, thence into Syriac, finally into Arabic. They are, in this last form, of comparatively recent date, and thus unknown to all the classical writers. The language is very corrupt, and it is to be regretted that the book, in lack of anything better, still holds its rank as an elementary book for Arabic students. Its first redaction is, according to a note to a manuscript in the Imperial Library in Paris (Suppl. No. 58), due to an Egyptian Christian, Barsuma, who probably lived toward the end of the 13th c. The first ed. with a Latin translation, by Erpemius, appeared at Leyden (1615). The book has been frequently translated into European languages—into French, by Tannegûy, Schier, etc.; into Spanish, by Miguel Garcia Ascensio, etc.; into Danish, by Rask; into German, by Olearius, Schaller, etc. Recent editions are by Bernstein (Gött. 1817), Caussin de Perceval (Paris 1818), Freytag (Bonn. 1823), Rödiger (Leip. 1830, etc.), Schier (Dres. 1831), Rasch (Copenh. 1832), Derenbourg (Berl. 1850), etc.

A book, *Amthál* (Parables), ascribed to Lokmân, and supposed to contain more than a thousand apologues, maxims, parables, sentences, etc., has never been discovered. Lokmân's supposed grave is shown at Ramlah, near Jerusalem, but also on the e. shore of the Lake of Tiberias, and at Yemen, and elsewhere.

LOLI'GO. See CALAMARY.

LO'LIUM. See DARNEL; RYE-GRASS.

LOLL, v. *lŏl* [Dut. *lollen,* to warm one's self over the coals: Icel. *lall,* the first imperfect walk of a child; *lolla,* to move or act slowly; *loll,* sloth]: to lounge; to give way to sloth; to rest lazily against anything; to hang out loosely, as the tongue; to thrust out, as the tongue. LOLL'ING, imp. LOLLED, pp. *lŏld.* LOLL'INGLY, ad. *-ĭng-lĭ,* in a lolling manner.

LOLLARD, n. *lŏl'ẻrd* [OE. *loll,* to wander idly about

and live at the cost of others; *lollere* and *lollaerd*, a sluggard, an idle wanderer: O.Ger. *lollen*, to sing: mid. L. *Lollardus*, a Lollard]: one of a sect of early reformers in Germany in the 13th and 14th centuries who went about preaching reformation of life, and having excited the indignation of the church by not joining any of the regular orders of the clergy or monks, were so called in contempt; in *Eng.*, a follower of Wicliffe: (see LOLLARDS, THE). *Note.*—The origin of the term *Lollard* is very much disputed, but the derivation given above appears the most probable. There is also suggested a connection with Lollard, *lolĭŭm*, a tare, a weed—expressive of the opinions of Churchmen—but this is a mere pun rather than an attempt to explain the word: Skeat gives the etymology O.Dut. *lollaerd*, a mumbler of prayers and hymns—from *lullen* or *lollen*, to sing, to hum, which nearly agrees with text. LOLLARDIST, a. pertaining to the Lollards. LOL'LARDY, n. doctrine or ways of the Lollards.

LOLLARDS, *lŏl'ėrdz*, or LOLLHARDS, *lŏl'hėrdz*, THE [see LOLLARD]: name in England, at the end of the 14th and beginning of the 15th c., of the followers of John Wicliffe, representatives and promoters of a religious agitation in behalf of reform in the church, and a more spiritual type of Christian living. It was a movement which spread through various countries, gathering men of differing character—the pure and saintly, and with them the restless and fanatical, the morose and self-seeking. So far as influenced by Wicliffe, the English Lollards were actuated by a sincere and evangelical spirit.

The Lollards appear first as a semi-monastic society whose members devoted themselves to the care of the sick and the burial of the dead, in Antwerp, about 1300. They were called from their frugal life, and the poverty of their appearance, *Matemans;* also, from their patron saint, *Brethren of Saint Alexius;* and, on account of their dwelling in cells, *Fratres Cellitæ;* and they acquired the name Lollards from their practice of singing dirges at funerals—the Low-German word *lollen*, or *lullen*, signifying to sing softly or slowly. They soon spread through the Netherlands and Germany, and in the frequent pestilences of that period, were useful, and everywhere welcome. The clergy and the begging-friars, however, disliked and persecuted them, classing them with the heretical *Beghards* (see BEGUINES), till Gregory XI. took them under his protection 1374. Female Lollard societies were formed in some places. The Lollards having been reproached with heresy, their name was afterward very commonly given to different classes of religionists, sometimes to the truly pious, sometimes to the worst pretenders; and in England, it became a designation of the followers of Wicliffe (q.v.), and thus extended into Scotland, where the *Lollards of Kyle* (in

Ayrshire) attracted attention, and became the objects of persecution in the end of the 15th c. The Wicliffe Lollards, or 'poor priests,' as they were termed, were sent out by him as preaching friars, taking portions of his English translation of the Bible, and mingling with the common people all over England. Oxford Univ. upheld them, many nobles had chaplains who were Lollardist preachers, wealthy merchants supported them with money; and this, although they were proscribed by the church. In 1395, they grew so numerous that they petitioned parliament through Sir Thomas Latimer to reform the church on Lollardistic principles. This petition is said to have been very plain-spoken against the Roman abuses: it alarmed the king; stronger repressive measures were taken; and the Lollards were never again so strong in England. In 1400, under the new king Henry IV., church and state united to crush the Lollards, who, nothing daunted, held their ground, though some of their number were burned at the stake. The Abp. of Canterbury dealt sternly with Oxford University. Severe rules were made, forbidding any one to preach without a bishop's license, and commanding that the Lollard books and Wicliffe's translation of the Bible were to be searched for and destroyed. When at last news came to England of the burning of John Huss, the English clergy were stirred to more vigorous proceedings against Lollardism, which from that time disappeared from streets, waysides, and market-places, but continued in secret retreats throughout the kingdom. It is not entirely clear what was the influence of the Lollards on the English Reformation. Lollardism was a religious movement; whereas the Reformation in England was in its inception largely political—yet the Lollards undoubtedly prepared its way by making the Bible familiar to the people in their mother tongue.

LOLLIPOP, n. *lŏl'lĭ-pŏp* [Bav. *lallen*, to suck, and *papa*, the infantine expression for eating: prov. Ger. *pappe*, anything nice to eat]: a coarse, common kind of sweetmeat; sweets made of treacle, butter, and flour.

LOMARIA, *n. lō-mā'rĭ-ă* [Gr. *loma*, an edge, alluding to the marginal position of the indusia]: an interesting genus of ferns, arborescent in habit, having blackish trunks shaggy at the apex; ord. *Filĭcēs*, sub-ord. *Polypodĭĕæ*.

LOM'AX, Lindsay Lunsford: American soldier: b. Newport, R. I., 1835, Nov. 4. He was graduated from the United States Military Academy in 1856, entered the 2d cavalry, but later resigned from the United States army, became a captain in the Virginia state troops, and 1861, Apr. 29, was made captain in the army of the Confederate states and assistant adjutant-general to General J. E. Johnston. In 1863, Feb., he was appointed colonel of the 11th Virginia cavalry; in 1863, July, brigadier-

general, and in 1864, Aug., major-general. He commanded a brigade under Fitzhugh Lee, a division under Early, and 1865 was made commander of the valley district. He took part in all the battles in which his portion of the Army of Northern Virginia fought, and surrendered with Johnston at Greensboro, N. C. After the war he was employed in the war records office at Washington, D. C.

LOMBARD, n. *lŏm'bėrd* or *lŭm'bėrd:* a native of *Lombardy;* on the *European Continent,* a banker or moneylender. LOMBARDIC, a. *lŏm-bârd'ĭk,* pertaining to the Lombards or Lombardy. LOMBARDY HOUSE, *lŏm'bėrd-ĭ,* a public pawnbroking establishment. LOMBARD STREET, in London, the chief street for banks, discount-brokers, and bullion-dealers; the money market—so named from the *Lombards,* who were the early bankers and inhabited that street.

LOMBARD, *lŏm'bard,* PETER (rather, PETER THE LOMBARD): one of the most famous of the Schoolmen: about 1100-1160, July 20; b. at a village near Novara, Lombardy. He was a pupil of Abelard, afterward became a teacher of theology in Paris, and 1159 was appointed Bp. of Paris. Bayle says that he was the first who obtained the title Doctor of Theology in the Univ. of Paris. He died at Paris. He was very generally styled *Magister Sententiarum,* or *Master of Sentences,* from his work *Sententiarum Libri IV.,* an arranged collection of sentences from Augustine and other Fathers, on points of Christian doctrine, with objections and replies, also collected from authors of repute. It was intended as a manual for the scholastic disputants of his age, and as may be inferred, is a compilation rather than an original work. It was the subject of many commentaries till the time of the Reformation. The works of Peter Lombard were edited by Aleaume (Louvain 1546).

LOM'BARD ARCHITECTURE: style invented and used by the Gothic invaders and colonists of n. Italy, from about the time of Charlemagne till it was superseded by the importation of the pointed style from France in the beginning of the 13th century. The architecture of the Lombards was derived from the Romanesque (q.v.), or debased Roman style which they found in the country—the general plan of the churches, and the general form of the pillars, arches, etc., being almost identical with that of the Roman Basilicas (q.v.). But in detail, there is no such resemblance; the Roman traditions are entirely abandoned, and instead of the debased acanthus leaves and fragments of entablatures, characteristic of the Romanesque style, the Lombards adopted a freer imitation of natural forms in their foliage, and covered their buildings with representations of the fights and hunting-expeditions in which they delighted. On

their first arrival in Italy, they employed Italian workmen; but when their own people became more numerous, they also laid aside the sword for the trowel. Accordingly, wherever in n. Italy the Lombards were numerous, their style prevailed; and where the Romans predominated, the Romanesque prevailed. N. Italy belonged naturally, at the time of Charlemagne, to the great German empire, and thus nearly the same style of architecture is found in Lombardy and in Germany as far n. as the Baltic (see RHENISH ARCHITECTURE). Few early examples of Lombard Architecture remain. In the unruly times when the style originated, the buildings were no doubt frequently destroyed by fire; this seems to have led to the desire to erect fireproof structures; thus the earlier as well as almost all the later examples are vaulted with stone, whereas the Romanesque basilicas generally are roofed with wood. This stone roof seems to have been the great desideratum in the new style. The earliest example is a small chapel at Friuli, built probably during the 8th century, and it is covered with an interesting vault. Examples of this date are rare in Italy; but in Switzerland, where the style is almost identical, several interesting specimens of early architecture remain, such as the churches of Romain-Motier, Granson, Payerne, etc., in which the transition from the Romanesque to the round arched Gothic is very clearly traceable. We there find the peculiar arch-ornament so characteristic of Lombardy and the Rhine, and we can trace the timid steps by which the Goths advanced in the art of vaulting.

The vaulting is the leading feature of Lombard Architecture, and from it spring the other distinguishing forms. Thus, the plain, round pillars, with a simple base and capital, which served to support the side-walls and roof of a basilica, are changed for a compound pier, made up of several shafts, each resting on its own base, and each provided with a capital to carry the particular part of the vaulting assigned to it. This change is deserving of particular notice as the germ of the principle afterward developed into the Gothic style (q.v.). Buttresses also are introduced for the first time, though with small projection.

The *Cathedral* of Novara is one of the most striking examples of Lombard Architecture. It belongs to the 11th century. The plan (fig. 1) shows the arrangement common at this epoch all over the German empire. It is derived from the old basilican type, having at the w. end an open atrium, with arcade around, from which the church is entered by a central door. The interior is divided into central and side aisles, with vaulted roof, and terminated with an apsidal choir. At the end of the atrium opposite the church is situated the baptistery. At Asti, there is an interesting example of the early Lombard baptistery. The same general arrangement of

plan afterward became common in German churches, the atrium being roofed over and included in the nave, and the baptistery forming the western apse of the double-apsed churches. The elevation of Novara is ornamented with these arcades and arched string-courses common in Lombard and Rhenish architecture.

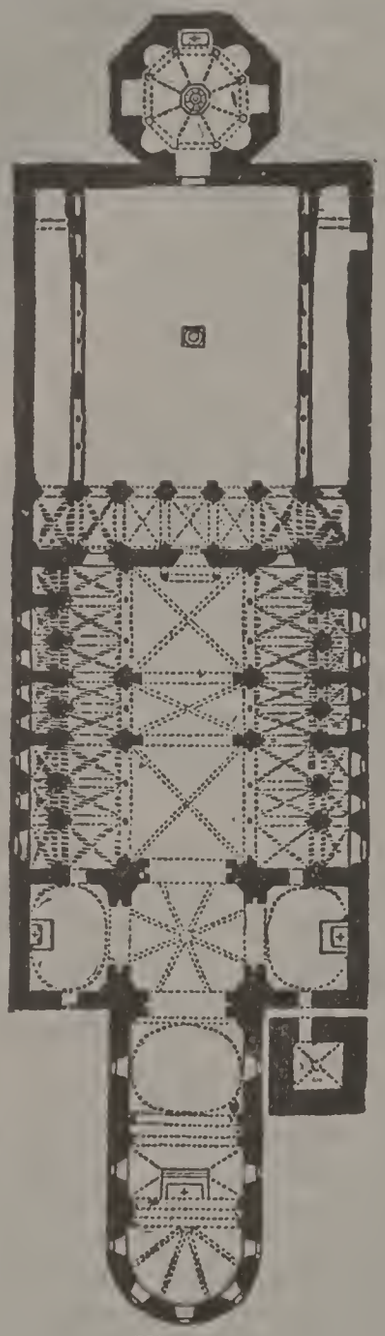


Fig. 1.

San Michele at Pavia, and San Ambrogio at Milan, also are good early examples of this style. In both, the grouping of the piers into vaulting shafts, wall-arch shafts, etc., is complete, and that beautiful feature of the style, the arcade round the apse, is fully developed. The atrium and w. front of San Ambrogio form one of the finest groups of Lombard Architecture.

Lombard Architecture is important as a link between the Romanesque of Italy and the Gothic of the Cisalpine

countries. On one hand, its origin can be traced back to the Roman basilicas; on the other it embodied those principles from the development of which sprang the great Gothic style of the middle ages.

LOMBARDIC SCHOOL OF PAINTING: style of art characterized by grace, agreeable taste for design, without great correctness, a mellowness of pencil, and a beautiful mixture of colors. Antonio Allegri, called Correggio (q.v.), was the father and greatest ornament of this school.

LOM'BARDS: German people of the Suevic family, not very numerous, but of distinguished valor, who acted an important part in the early history of Europe. The name is from *Longabardi*, or *Langobardi*, a Latinized form in use since the 12th c., and was formerly supposed to have been given with reference to the long beards of this people; but is now held to be derived from a word *parta*, or *barte*, which signifies battle-ax. About the 4th c., the Lombards seem to have begun to leave their original seats (on the Lower Elbe, where first the Romans probably came into contact with them about the beginning of the Christian era), and to have fought their way southward and eastward, till they came into close contact with the Eastern Roman empire on the Danube, adopted an Arian form of Christianity, and after having been tributary to the Heruli, raised themselves upon the ruins of the power of that people and of the Gepidæ, shortly after the middle of the 6th c., to be masters of Pannonia, and became one of the most wealthy and powerful nations in that part of the world. Under their king Albion (q.v.), they invaded and conquered north and central Italy (568-9). The more complete triumph of the Lombards was promoted by the accession of strength which they received from other tribes following them over the Alps—Bulgarians, Sarmatians, Pannonians, Norici, Alemanni, Suevi, Gepidæ, and Saxons—for the numbers of the Lombards themselves were never very great.

The Lombards, after the example of the Romans themselves in the conquests of former times, were for the most part contented with a third of the land or of its fruits. One of their kings, Authari (584-590), assumed the title Flavius, which had been borne by some of the later Roman emperors, and asserted the usual claims of a Roman ruler; while the administration of the Lombard kingdom was soon so superior to that which then prevailed in other parts of Italy, that to many the change of masters was a positive relief from unjust and severe exactions. While the higher nobility, however, in general retained some portion of their former wealth and greatness, the possessors of small properties became fewer in number, and sank into the class of mere cultivators, to whom it was comparatively indifferent whether they acknowledged a Roman or a Lombard superior. The rights of the municipal corporations also, though ac-

knowledged, were gradually abridged, through the encroachments partly of the Lombard dukes, partly of the higher clergy, till few relics of their ancient self-government remained. These few, however, were the germs from which, at a subsequent period, the liberties of the independent Italian cities were developed.

The conversion of the Arian Lombards to the orthodox faith was brought about by the policy of Gregory the Great and the zeal of Theodolinda, wife of Authari, and subsequently of his successor, Agilulf (590-615).

Theodolinda persuaded Agilulf to restore a portion of their property and dignities to the Rom. Catholic clergy, and to have his own son baptized according to the Rom. Catholic rites. She also built the magnificent Basilica of St. John the Baptist at Monza, near Milan, in which in subsequent times was kept the Lombard crown, called the *Iron Crown* (q.v.). The Lombards were erelong fully united to the Rom. Cath. Church. The contests of the dukes prevented the firm consolidation of the kingdom, or any great extension of its boundaries. The *Edict* of the Lombard king, Rothari (638-654), declaring the laws of the Lombards, 643, Nov. 22, is memorable, as having become the foundation of constitutional law in the Germanic kingdoms of the middle ages. It was revised and extended by subsequent Lombard kings, but subsisted in force for several centuries after the Lombard kingdom had passed away. The Lombards, however, gradually became more and more assimilated to the former inhabitants of the land of which they had made themselves lords; their rudeness was exchanged for refinement, and the Latin language prevailed over the German, which they had brought from the other side of the Alps. But of the original Lombard language little is known, nothing remaining to attest its certainly German character except a few words and names, the very ballads in which the stories of Lombard heroes were recorded having come down to us in Latin versions only.

Liutprand (713-744), raised the Lombard kingdom to its highest prosperity. He quelled with strong hand the turbulence of the nobles, gave the finishing blow to the exarchate of Ravenna, and sought to extend his dominion over all Italy. But the popes now entered on that Macchiavellian policy which they long incessantly pursued, of preventing a union of all Italy under one government, thus securing for themselves the greater power in the midst of contending parties. This, with the disputes concerning the succession to the Lombard throne, led to the downfall of the Lombard kingdom not long after it had reached its utmost greatness. The popes allied themselves with the Frankish kings; and Pepin, who had been anointed by Stephen II. to the 'patriciate,' i.e., the governorship of Rome, invaded Italy (754), and compelled the Lombard king Aistulf (749-754), who cherished the same ambitious designs as Liutprand, to refrain

from further conquests, and even to give up some of the cities which had already yielded to his arms, which Pepin (755) bestowed on the Roman Church and commonwealth. New causes of hostility between the Frank and Lombard monarchs arose when Charlemagne sent back to her father his wife, daughter of the Lombard king Desiderius (754-774), and Desiderius supported the claims of the children of Carloman, Charlemagne's brother. In the autumn of 773, Charlemagne invaded Italy; and in May of the following year, Pavia was conquered, and the Lombard kingdom, after an existence of 206 years, was overthrown. In 776, an insurrection of some of the Lombard dukes brought Charlemagne again into Italy, and the dukedoms were broken down into counties, and the Lombard system, as far as possible, supplanted by that of the Franks. In 803, a treaty between Charlemagne, the western, and Nicephorus, the eastern emperor, confirmed the right of the former to the Lombard territory, with Rome, the Exarchate, Ravenna, Istria, and part of Dalmatia; while the E. empire retained the islands of Venice and the maritime towns of Dalmatia, with Naples, Sicily, and part of Calabria. Compare Türk's *Die Longobarden* (1835); works by Flegler (1851); Bluhme (1874); and Martens (1880); and on the language by Meyer (1877).

LOM'BARDY: that part of Upper Italy which formed the 'nucleus' of the kingdom of the Lombards (q.v.). It consisted of the whole of Italy n. of the peninsula, with the exceptions of Savoy and Venice, and after the fall of the Lombard kingdom, 774, was incorporated in the Carlovingian empire. In 843, it was created a separate kingdom, but was not entirely severed from the Frankish monarchy till 888. From this time it was ruled by its own kings till 961, when it was annexed to the German empire. Out of the wrecks of the old independent kingdom of Lombardy then arose a number of independent duchies, as Friuli, Mantua, Susa, Piedmont, etc., and soon afterward the republics of Venice, Genoa, Milan, and Pavia. These republics consisted of one sovereign town, surrounded in many cases by a large dependent territory. The Lombard cities declared themselves independent toward the commencement of the 12th century, and in 1167 were joined by their less powerful neighbors in the 'first Lombard league,' for the maintenance of their liberties, against Frederic Barbarossa, whom they severely defeated 1176. In 1225, they were compelled to form the 'second Lombard league' against Frederic II., and with similar success. About this time, petty tyrants arose in most of the cities, and the country was distracted by internal dissensions, carefully fostered by France and Germany. These two great powers and Spain strove for the possession of Lombardy; and Spain obtained it 1540, and held possession till about 1706, when after another dispute, the duchies of Milan

and Mantua (the country bounded by the Ticino, Po, Mincio, and Switzerland), which alone now retained the name of Lombardy, came into the hands of Austria, and were designated 'Austrian Lombardy.' In 1796, it became part of the Cisalpine republic, but in 1815 was restored to Austria, and annexed politically to the newly-acquired Venetian territory under the name Lombardo-Venetian Kingdom. This union was dissolved 1859 by the Italian war; Lombardy was given up to the new kingdom of Italy; Austria, however, retaining, for a time, her Venetian territory. Lombardy is now a 'compartimento' of the kingdom of Italy, comprising the administrative provinces of Bergamo, Brescia, Como, Cremona, Mantua, Milan, Pavia, and Sondrio. Total area, about 9,300 sq.m.

The n. districts of Lombardy are alpine in character, but the rest of the country is of extraordinary fertility, chiefly from universal irrigation. The country is celebrated for the products of its pasture-land, and as much as 50,000,000 lbs. of cheese is annually produced in the dairies. Agriculture is more advanced than in any other part of Italy, wheat, rice, and maize being principal crops: melons, gourds, oranges, figs, citrons, pomegranates, peaches, plums, and other fruits of excellent quality, are largely produced. The numerous mulberry plantations are a prominent feature, and vines are extensively cultivated, though the wine produced is of inferior quality. Various kinds of marble, some of great beauty, are worked; and there are a few iron mines. The chief manufactures are silk, cotton, and woolen goods, flax, paper, glass, and pottery; the annual value of the silk exceeds $15,000,000. In 1882 Lombardy suffered terribly from floods.—Pop. (1901) 4,282,728.

LOMBOK, *lŏm-bŏk':* island in that crescent group in the Malayan archipelago known as Sunda Islands. It is between Bali and Sumbawa; area estimated 1,480 sq.m. The people are Mohammedans. The n. and s. coasts are each traversed by a chain of mountains, some of which are volcanic, but the interior is a fertile valley. Rice and cotton are largely cultivated. Cap., Mataram; principal seaport, Ampanam.—Pop. of island 370,000.

LOMBROSO, *lōm-brō'zō*, CESARE: Italian scientist: b. Verona 1836. In 1862 he became professor of psychiatry at Pavia, and later of medical jurisprudence and psychiatry at Turin. He became widely known through his investigations of the abnormal human being, and through his theories deduced therefrom; theories which encountered great opposition and are not yet entirely accepted, but which formed in part the basis for the present criminal anthropology. He published numerous works, such as: *The Criminal* (1887-95); *The Man of Genius* (1890; Eng. trans. 1891); *The Anarchists* (1895); *The Causes of, and Contest against, Crime* (1902). Consult the study by Kurella (1892).

LOMENT, n. *lō'mĕnt*, or LOMENTUM, n. *lō-mĕn'tŭm* [L. *lomentum*, bean-meal]: in *bot.*, a legume or pod with transverse partitions, each division containing one seed. LOMENTACEOUS, a. *lō'mĕn-tā'shŭs*, furnished with a loment; bearing loments: see LEGUME.

LOMOND, LOCH, *lŏch lō'mond:* largest of Scottish lakes: between Dumbartonshire on the w., and the counties of Stirling and Perth on the east; 24 m. long, 7 m. broad at the s. extremity, though the n. half is only about one m. in width; area 45 sq.m. Its depth varies from 60 to 600 ft., and its surface is only about 22 ft. above sea-level. The waters of the loch are swelled by many streams, chief of which is the Endrick, from the s.e.; the surplus waters are carried off by the Leven, affluent of the Clyde. The lower portion of the loch is surrounded by a hilly but well-cultivated and finely wooded country, and the scenery is rich and beautiful. Around the n. portion of the loch are piled high, wild, and picturesque masses of mountains—Ben Lomond on the e., the Arrochar hills on the w. The surface is dotted with islands, finely diversified in general appearance, and contributing greatly to the exquisite beauty of the scene. Several steamers ply on the lake.

LOMONOSOFF, *lom-o-nō'sof*, MIKHAIL VASILIEVICH: Russian poet, philologist, chemist, and statesman: 1711-65; b. in the village of Denisovka (now named Lomonosoff in honor of the poet), in the government of Archangel, Russia; son of a poor fisherman. The few books accessible Lomonosoff learned by heart. At 17 years of age by the help of friends who had noticed his hunger for knowledge, he was placed in school at Moscow. Lomonosoff rose to be one of the most learned men in Europe, and became prof. (ultimately rector) in the Univ. of St. Petersburg; and in the last year of his life, sec. of state. His Russian grammar is said 'to have drawn out the plan, and his poetry to have built up the fabric of his native language.' He is called the 'father of Russian literature.'

LONCHOPTERIS, n. *lŏng-kŏp'tĕr-ĭs* [Gr. *longchē*, a spear; *pteris*, a fern]: in *geol.*, a fossil fern-like frond, occurring in the Coal Measures, having leaves many times pinnate.

LON'DON: chief city of the county of Middlesex, Ontario, Canada; at the junction of the two branches of the Thames, about 23 m. n. of Lake Erie, and on several railroads. The site was laid out 1825. When the city was called London, the river, which had formerly been known by an Indian name, received the name Thames; a Westminster and a Blackfriars Bridge were thrown over it; and the names from the streets of London, Eng., were given to the principal streets. Medicinal sulphur springs attract many visitors. By the Thames London has communication by water with the lakes; and it has

already adequate railway outlet. The centre of a rich agricultural district, London carries on large trade in the produce of the country; there are manufactories of stoves, furniture, lumber products, chewing-gum, cigars, clothing, agricultural implements, carriages, electrical machinery and supplies, shoes, flour, cement products, foundry products, etc. There are branches of 10 chartered banks and several loan companies in the city.

The city is the diocesan headquarters of the Catholic and Church of England denominations, has two handsome cathedrals and more than 30 churches of various denominations. The principal institutions are Western University, the Academy of the Sacred Heart, the Provincial Asylum for the Insane, Victoria and St. Joseph's hospitals, two orphanages, Shelter for Friendless Children, Aged People's Home, Home for Incurables, Y. M. C. A., public library, conservatory of music, and Harding Hall (a young ladies' college). There are also a Collegiate Institute and about 30 public and separate (Catholic) schools. London is governed by a mayor and 12 aldermen elected for one year. Pop. 43,000.

LONDON, *lŭn'dŭn:* the largest city in the world; metropolis of England, and capital of the United Kingdom of Great Britain and Ireland and of the British empire; on both banks of the Thames, about 50 m. from its mouth. The dome of St. Paul's is in lat. 51° 30′ 48″ n., and in long. 5′ 48″ w. Pop. (1350) 90,000; (1600) 180,000; (1650) 350,000; (1700) 550,000; (1801) 864,035; (1841) 1,872,365; (1891) Greater London, 5,633,806; (1901) the same 6,581,402.

London seems to have been the capital of an ancient British tribe. Under the names *Londinium, Londinum,* and *Augusta,* it was one of the chief stations of the Romans in Britain. They encircled a portion of what is now the city with a wall, which was rebuilt and extended in later ages. In Stow's time the remains of the Norman or Anglo-Norman wall were about two miles in extent, from the Thames at the Tower round to the Thames at Blackfriars; it is now nearly obliterated. London was an important place in Anglo-Saxon times, was plundered and burnt by the Danes in the 9th century, and was prominent in the submission by the kingdom to William the Conqueror. Since that time it has been practically the metropolis, and its history is interwoven with that of the nation. Important dates are: Foundation of the bishopric 604, building of the Tower 1078, great plague 1665, great fire 1666. In the civil wars the Londoners took the side of parliament. Its history since that time has been one of marvellous growth and expansion in area, population, and wealth.

Divisions.—London consists of the city of London proper and the occupied surrounding parts of about 120 sq.m. in Middlesex, Kent, and Surrey counties. By the Metropolis Management Act of 1855, defining the city

limits for sanitary purposes, and again by the Local Government Act of 1888, constituting the administrative county of London, the entire area was 75,379 acres, of which 31,422 were in Middlesex, 23,123 in Surrey and 20,834 in Kent. The London Government Act of 1899 slightly changed the boundaries of the county, which, with the exception of the city of London, was divided into 28 metropolitan boroughs, the entire area of the county now being 74,817 acres, including 31,652 acres formerly in Middlesex, 20,064 formerly in Kent, and 23,101 formerly in Surrey. The boroughs with their area and population respectively are as follows: *North of the Thames*—City of London 673 acres, pop. 26,923; City of Westminster 2,503 and 183,011; Bethnal Green 759 and 129,680; Chelsea 660 and 73,842; Finsbury 589 and 101,463; Fulham 1,703 and 137,289; Hackney 3,289 and 219,272; Hammersmith 2,286 and 112,239; Hampstead 2,265 and 81,942; Holborn 405 and 59,405; Islington 3,091 and 334,991; Kensington 2,291 and 176,628; Paddington 1,356 and 143,976; Poplar 2,328 and 168,822; St. Marylebone 1,473 and 133,301; St. Pancras 2,694 and 235,317; Shoreditch 658 and 118,637; Stepney 1,766 and 298,600; Stoke Newington 863 and 51,247. *South of the Thames*—Battersea 2,160 and 168,907; Bermondsey 1,500 and 130,760; Camberwell 4,480 and 259,339; Deptford 1,563 and 110,398; Greenwich 3,852 and 95,770; Lambeth 4,080 and 301,895; Lewisham 7,014 and 127,495; Southwark 1,131 and 206,180; Wandsworth 9,108 and 231,926; and Woolwich 8,277 and 117,178; making a total of 74,817 acres and a population of 4,536,433. Greater London extends 15 m. around Charing Cross, embracing numerous large towns contained within the boundaries of the metropolitan and city police districts and in 1901 had a population of 6,581,402. For postal and telegraphic purposes the city is divided into eight districts—the Northern, Northwestern, Southwestern, Southeastern, Western, West Central, Eastern, and East Central, which are designated by their initial letters.

Topography, Bridges, Streets, etc.—The greater portion of London stands on the n. side of the Thames, the elevation rising about 36 ft. per m.; the opposite side of the city is uniformly flat, some portions of it being several ft. below high tide. The width of the river varies greatly in its course through the city, at Putney being 550 ft. wide, at Battersea 960, Vauxhall 630, Westminster 275, Waterloo 1,140, Blackfriars 830, London Bridge 800, and at Woolwich 1,470 ft. The Thames at London is crossed by the following bridges: the Tower Bridge, just below the Tower of London, and farthest down the river; London Bridge, connecting the city at King William street with Southwark at Wellington and Tooley streets; Southwark Bridge, connecting Southwark with the city; Blackfriars Bridge at Bridge street, Lon-

don, and Blackfriars Road, Southwark; Waterloo Bridge, connecting the Strand with Waterloo road; Westminster Bridge at the n. end of the Houses of Parliament, connecting Westminster with Lambeth, which are also connected farther up by the Lambeth and Vauxhall bridges; the Chelsea Suspension Bridge, connecting Chelsea and Pimlico with Battersea; the Battersea Bridge, uniting Battersea and Chelsea a little farther west; Putney Bridge, connecting Fulham and Putney; and Hammersmith Bridge, connecting Hammersmith with Barnes. There are also six railway bridges. The Thames Tunnel, formerly a footway under the river, 1,200 ft. long, about two m. below London Bridge, now constitutes part of the East London railway. A little way below London Bridge is the Tower Subway, a small tunnel for foot passengers. There are several other tunnels for both pedestrian and vehicular traffic; three underground electric railways pass under the river; and there is a free ferry between North and South Woolwich. The streets of London depend mainly for their direction on the course of the Thames; the principal of them being nearly east and west. One route extends from Hammersmith to Mile End and Bow, through Piccadilly, Strand, and Cheapside; another, beginning in the Uxbridge road, passes through Oxford street and Holborn, and joins the former at Cheapside; and another extending from near Kensington Gardens, through Oxford and Cambridge terrace along the Marylebone, Euston and Pentonville roads to Islington, and thence by the City road to Finsbury square. Among the principal streets running n. and s. the extreme w. is Edgeware road, entering the county at Kilburn and terminating in Oxford street, but connecting by other streets with the river. Park lane and Grosvenor place on this line contain many handsome residences. Regent street with Portland place, Tottenham Court road with Charing Cross road, and other lines leading to Westminster, Pimlico and Chelsea are important, as are also Gray's Inn road and the line of Chancery lane, and Farringdon street, etc., leading to Fleet street and Blackfriars bridge. Among the most fashionable streets in the w. end are Pall Mall and Piccadilly running e. and w. and Regent, Bond, and Saint James streets n. and s. The most picturesque street in London is the line of the Strand and Fleet street. There is still a deficiency of wide thoroughfares for the city traffic. The Northern or Victoria Thames Embankment forms a wide and handsome avenue from Westminster Abbey to the heart of the city. The streets of London are well-paved, clean, and well-lighted; wood and asphalt are gradually displacing stone in the crowded thoroughfares.

Squares, Parks, and Monuments.—The principal squares in the city are Saint James's, n. of Pall Mall; Eaton, Grosvenor, Cavendish, Belgrave (10 acres), and Portman, all in the West End; Tavistock, Bedford,

Bloomsbury, Euston, and Russell (10 acres), in the w. central. Of the open places in the metropolis the parks and heaths and commons are most important, as they afford breathing spaces for the congested population. The largest and most noted parks are Hyde Park (364 acres) between Uxbridge and Kensington roads; Kensington Gardens (275 acres) near Hyde Park; Saint James's Park (93 acres) extending from Buckingham Palace to the Horse Guards; the Green Park (53 acres) between Saint James's Park and Piccadilly; Regent's Park (472 acres) on the n. side, including the Botanic and the Zoological Gardens; Battersea Park (200 acres) on the s. bank of the Thames, opposite Chelsea Hospital; Victoria Park (217 acres) in the n.e.; Southwark Park (63 acres); Greenwich Park (185 acres), containing the famous Greenwich Observatory; Brockwell and Dulwich parks in the s.; Avery Hill in the s.e.; Finsbury and Clissold parks on the northern borders, and Springfield Park, Clapton (32½ acres); Ruskin Park, Denmark Hill (24 acres); and Mountsfield Park (12¾ acres). The most extensive of the heaths and commons preserved for the public are Tooting and Streatham commons on the s.; Blackheath and Plumstead Common on the s.e.; Hampstead Heath on the n.; and Hackney Marsh on the n.e.

Monuments and statues in London are numerous, though many of them are not remarkable for beauty. The chief are: 'The Monument' (202 ft. high) on Fish Street Hill; the Albert Memorial (176 ft.) in Hyde Park, the most splendid and costly monument of modern times; the Nelson column (176½ ft.) in Trafalgar square; the equestrian statue of Wellington in Hyde Park and another statue of him in front of the Exchange; the Crimean Monument, Westminster; the York Column (124 ft.) at the s. end of Waterloo place; statues of Sir Charles J. Napier, General Gordon, and Sir Henry Havelock in Trafalgar square; the memorial to Queen Victoria in front of Buckingham Palace; the statue of Sir Robert Peel at the top of Cheapside; the Egyptian obelisk (Cleopatra's Needle), and statues of Robert Raikes, General Outram, John Stuart Mill, and others on the Thames Embankment, not far from the Temple; the Guards' Memorial and a statue of Sir John Franklin in Waterloo place; the monument to Sir Hugh Middleton on Islington Green; a statue of Lord Beaconsfield in Westminster Palace yard; the Peabody statue behind the Royal Exchange; the statue of Carlyle on Chelsea Embankment; and an equestrian statue of Prince Albert in Holborn Circus.

Public Buildings.—The centre of business is the group in the ancient city composed of the Bank of England in Threadneedle street, the Royal Exchange and the Mansion House, the official residence of the lord-mayor. There are also the Stock Exchange in Capel court, the Coal

Exchange in Lower Thames street, the Corn Exchange in Mark lane, etc. The Guildhall, containing the Corporation Library (of 40,000 volumes) and Museum, is situated at the n. end of King street, Cheapside. Here the business of the city corporation is transacted, and here the civic banquets are given. The city companies also have their halls, the most pretentious of which are the Clothworkers', the Goldsmiths', the Fishmongers', and the Ironmongers'. Many of the old historic structures have been torn down to make room for streets or to be replaced by modern office buildings. The Tower of London, a confused mass of houses, towers, forts, batteries, ramparts, barracks, armories, storehouses, and other buildings, included with an area of about 12 acres, stands at the extreme verge of the city on the n. bank of the Thames. The Tower contains the Wellington Barracks, the jewel room, where are preserved the regalia of Great Britain, the horse armory, Queen Elizabeth's armory, and the Church of Saint Peterad-Vincula.

Government Buildings.—The majority of the government offices are situated in or near Whitehall. The Home Office, the Department of Education, and the Treasury are housed in one range of buildings; facing Saint James's Park is the home of the India Office and the Local Government Board; the Horse Guards, the official residence of the commander-in-chief, has an arched entrance to Saint James's Park. Opposite the Horse Guards, and next to the banqueting hall of Whitehall Palace, is the War Office, and further on the Admiralty Office. The Foreign Office and the Colonial Office occupy an extensive pile of buildings in Downing street. Somerset House, facing the Strand, is a quadrangular structure with a river-frontage of 800 ft.; it is occupied mostly by government offices. The Custom-house, with a long room 190 ft. by 66, is finely situated on the riverside. The General Postoffice, a noble mass in Saint Martin's-le-Grand, 390 ft. long, 130 ft. wide, and 64 ft. high, has a central hall 80 ft. by 60, and 53 high, with a vast number of offices all around it; and a large block of buildings just opposite for telegraph and other business. The Mint, on Tower Hill, a cluster of buildings in which the gold and silver coinage is managed, occupies about 10,000 sq.yds. The royal arsenal and dockyard for military stores is at Woolwich.

Houses of Parliament.—The Houses of Parliament, a vast structure, which has cost £3,000,000, is perhaps the finest, certainly the largest, Gothic building in the world applied to civil purposes. The building contains the House of Peers and the House of Commons, with the connected apartments and offices; the façade, which overlooks the river, is 940 ft. long. Victoria Tower, 75 ft. square and 340 ft. high, and supported on four pointed arches 60 ft. in height, is in the s.w. angle of the building; the lantern tower in the centre is 300 ft. high and

60 ft. square; and the clock tower, at the n. end, is 318 ft. high. The apartment of the House of Peers is 97 ft. long, 54 ft. wide, and 45 ft. high, and is magnificently decorated, whereas the apartment of the House of Commons is somewhat smaller and less handsomely decorated. Westminster Hall, 290 ft. long, now used as a members' entrance to the House of Commons, is the most magnificent hall in the kingdom.

Law Courts.—There are law-courts, civil and criminal, of all degrees of dignity, and with various extent of jurisdiction. For some of the more important more worthy buildings have been erected near the Strand. The chief law buildings are the magnificent new law courts or Palace of Justice in the Strand (opened 1882, superseding the Westminster Hall Courts of Law and Equity, and the Lincoln's Inn Courts of Equity, etc.), and with Chancery, Queen's Bench, and other divisions of the High Court of Justice. The Sessions House of the City of London occupies the site of the Old Bailey and Newgate Prison, which were demolished to make room for it. There are also Clerkenwell Sessions House; the city police courts, held at the Mansion House and Guildhall and presided over by the lord-mayor and one alderman; and numerous police courts. The Inns of Court (q.v.) are in some sense colleges for practitioners in the law; they comprise the Inner Temple, the Middle Temple, Lincoln's Inn, and Gray's Inn; the dependent nine Inns of Chancery have been sold, or are simply chambers to let. Connected incidentally with legal matters is the Record Office, large depository for official papers in Fetter lane. The Inner and Middle Temples are close to Temple Bar, between Fleet street and the river; Lincoln's Inn is between Chancery lane and Lincoln's Inn Fields (a public garden); and Gray's Inn is situated on the n. side of Holborn.

Palaces.—Saint James's Palace, at the foot of Saint James's street, an irregular and inelegant cluster of buildings, is used for court purposes, but not as the royal residence. Buckingham Palace, facing the w. end of Saint James's Park, the King's or Queen's London residence, is a large but low quadrangular mass, with very inadequate court accommodation. It is occupied occasionally by the royal family during spring and summer. Kensington Palace, in Kensington Gardens, is now open to the public. Opposite the Houses of Parliament, on the Surrey Side of the river, is Lambeth Palace, the residence of the archbishop of Canterbury, containing a library of 30,000 volumes; Fulham Palace, the residence of the bishops of London, is also on the Thames. Greenwich Palace, once occupied by the Tudors and Stuarts, is now used as a training school for the navy; Whitehall—the banqueting hall—is the only remnant of the ancient palace of Whitehall; and Eltham Palace,

once the residence of Henry VIII., is now a well-preserved ruin.

Churches.—Saint Paul's cathedral is at the e. end of Ludgate Hill, extending to Cheapside, and was built by Sir Christopher Wren (1675-1710) at a cost of £748,000. It is in the form of a cross, 514 ft. long, by 286 wide; the cross, which surmounts the ball over the dome, is 356 ft. above the marble pavement below. Saint Paul's contains many monuments to illustrious persons. Westminster Abbey, also cruciform, is 530 ft. in extreme outer length, by 203 in width; the w. towers are 225 ft. high. Henry VII.'s chapel at the e. end, is a beautiful example of enriched Gothic. The abbey has no special connection with the see of London, but is intimately connected with some of the court and parliamentary ceremonials. It was originally a Benedictine monastery, and is said to have been founded by Sebert, King of the E. Saxons (about 616); enlarged by King Edgar and Edward the Confessor; and rebuilt, nearly as we now see it, by Henry III. and Edward I. Here most of the British sovereigns have been crowned; and here many of them have been buried. The Poet's Corner, with its tombs and monuments of eminent men, is a well-known spot of the abbey. Saint Saviour's Cathedral in Southwark, is the third in importance of the London churches. The most remarkable among the other sacred edifices in London are: Saint Bartholomew's in West Smithfield; Saint Giles', Cripplegate; Saint Stephen's, Walbrook; the Temple Church; Saint Bride's, Fleet street; Saint Martin's-in-the-Fields; Saint George's Cathedral, Southwark; the new Cathedral at Westminster; the City Temple on the Viaduct; Christ-Church, Westminster Bridge road; the Apostolic Church, Gordon square; the Tabernacle, Newington Butts; and the Wesleyan Methodist connectional building at Westminster.

Museums, Art Galleries, Libraries, etc.—The chief museums are the British Museum (q.v.) founded in 1753, in Great Russell street, together with the building in the South Kensington quarter for the natural history collection; the museum of the Royal College of Surgeons, Lincoln's Inn Fields, with a remarkable collection of human skulls from all parts of the world; the Soane Museum, also in Lincoln's Inn Fields, with a valuable collection of books, paintings, maps, manuscripts, charts, etc.; the Dulwich College Gallery; the great South Kensington (now the Victoria and Albert) Museum, with which are connected the schools and headquarters of the Department of Science and Art; the Bethnal Green Museum; Hertford House, with its priceless art treasures; and the Horniman Museum at Forest Hill, the last two gifts to the city. The National Gallery with 1,200 paintings and the National Portrait Gallery with about 1,100 portraits, busts, etc., are situated side by side on the n. side of Trafalgar square, and the

Tate Gallery of British Art is on the Thames Embankment. The Royal Albert Hall of Arts and Sciences, situated between the Horticultural Gardens and Kensington road, was intended chiefly for scientific and art purposes but is mainly used for concerts, the hall seating 8,000 persons. It also contains a picture gallery. The Albert Memorial is in Hyde Park, opposite the Royal Albert Hall. Burlington House, Piccadilly, was appropriated by the nation to the Royal Society and other scientific societies, and the n. wing and a suite of rooms in the rear of it are now occupied by the Royal Society, the e. and w. wings by various learned societies, the Royal Society, the Society of Antiquaries, and others. The Imperial Institute occupies a splendid block of buildings near the South Kensington Museum and the Albert Hall. The largest libraries, beside that of the British Museum, are the Lambeth Palace library, the Guildhall library, Sion College library, the London subscription library, London Institute library, several large circulating libraries, and many small public libraries supported by taxes.

Educational Institutions, Scientific Associations, etc.— London University (q.v.) stands at the head of the educational institutions; there are also denominational colleges; the Royal Naval College, Greenwich; the Royal Military Academy, Woolwich; the Royal College of Science; Royal College of Music; Royal Academy of Music; Trinity College; the medical schools in connection with the hospitals; several colleges for women; etc. Among the grammar and secondary schools are Westminster School, founded by Queen Elizabeth in 1560; Saint Paul's, founded in 1509; the Merchant Taylors', the Mercers', and other city company schools; City of London School; University College School; and King's College School. Besides these there are numberless private schools, several city and guild institutions for technical education, the National Society schools, the London County Council schools, numbering more than 500, many free schools, several high schools for girls, and several polytechnic and technical schools, equipped and supported by the London County Council. The expenditures for public educational purposes in London amount to about £5,000,000 annually, of which the nation pays £2,000,000, and London the balance, of which £2,500,000 is required for elementary education and £500,000 for higher education. The London County Council has a roll of 750,000 scholars in its elementary schools, and 20,000 teachers, 17,000 of whom are in the elementary schools.

Among the more important of the scientific associations are the following: The Royal College of Physicians, founded in 1518; the Society of Antiquaries in the Burlington House, founded in 1572; the Royal Society, also in the same building, founded in 1660; the

Royal Academy in Trafalgar square, founded in 1768; the Royal Institution of Great Britain, founded in 1799; the Royal College of Surgeons; the Royal Geographic Society; the Royal Institute of British Architects; the Royal Horticultural Society, with botanic gardens in Regent's Park, and also at South Kensington and at Chiswick; the Institution of Civil Engineers; the British Association; the Geological Society; the Royal Astronomical Society; the Zoological Society, with its collection of animals in Regent's Park; the Royal Asiatic Society; and the Anthropological Institute.

Clubs, Hotels, Theatres, etc.—The majority of the clubs are situated in or near Pall Mall, and many of the buildings are of exceptional architectural beauty. The most noted among them are: the Athenæum, the Army and Navy, the United Service, the Guards', the Junior United Service, the Carlton, the Reform, the Junior Carlton, the Oriental, the Travellers', Brooks, White's, the Conservative, the Devonshire, the Oxford and Cambridge, the Garrick (dramatic), and four political clubs that have the largest number of members, the Constitutional with 6,500, the National Liberal 7,000, the Junior Conservative 5,500, and the Junior Constitutional 5,000. London is not supplied with hotels adequate to its size and importance. The best of those belonging to the railway companies are the Great Northern, in King's Cross; the Midland, at Saint Pancreas; the Great Western, at Paddington; the Grosvenor, at Pimlico; the Charing Cross, the Cannon Street, in connection with the South Eastern railway, and that at Marylebone, in connection with the Great Central railway. Of the other great hotels the most important and attractive are the Grand Hotel in Trafalgar square; the Victoria and the Metropole, in Northumberland avenue; the Cecil, in the Strand; the Savoy, on the Thames Embankment; the Carlton, at the corner of the Haymarket; the Russell, on Russell square; DeKeyser's at Blackfriars; the Langham, in Portland place; the Westminster Palace Hotel in Victoria street; the Salisbury, in Salisbury square, Fleet street; the First Avenue, near Gray's Inn, and the famous Ship Hotel, at Greenwich.

Of places of amusement, theatres, concert and music halls, etc., London has many. The Council is the licensing authority in London for 11 theatres, 41 music halls, and 248 concert halls, together with 5 music halls and 18 concert halls provisionally licensed. There are 44 theatres licensed by the Lord Chamberlain, the two 'patent' theatres (Drury Lane and Covent Garden) and the chartered Royal Albert Hall. The most noted theatres are Covent Garden (the Royal Opera House), His Majesty's. the Strand, the Gayety, Drury Lane, the Haymarket, the Adelphi, the Surrey, the Garrick, Terry's, the Savoy, the Vaudeville, the Avenue, the Comedy, Saint James's, the Lyric, the Criterion, the Shaftesbury, the

Prince of Wales, the Duke of York, the Court, and Wyndham's. There are also many new ones but their names are not so familiar. Queen's Hall in Portland place and Albert Hall at Kensington, are devoted to high-class music; the Empire and the Alhambra in Leicester square are second-class music halls. Other halls devoted to various purposes include Hanover Square Rooms for concerts, Exeter Hall in the Strand for religious society meetings, the Freemasons' Hall in Great Queen street, Olympia Hall in West Kensington, the Congregational Memorial Hall, and the Agricultural Hall at Islington, the largest covered area in London.

Popular Resorts.—These include the Exhibition at Earl's Court, for open-air entertainments, and the Olympia at Kensington, which is of less magnitude; the People's Palace in the East End (Mile-end road), containing halls for concerts, a library, gymnasium and swimming baths, technical schools, etc.; the Crystal Palace at Sydenham, where great musical and other entertainments are given and where there are many other interesting exhibits; the somewhat similar Alexandra Palace, under public management, on Muswell Hill on the n.; the Zoological and the Botanic Gardens in Regent's Park; the Kew Gardens on the w., and Hampton Court Palace toward the s.w.

Charitable and Penal Institutions.—There are numerous alms-houses. The societies, associations, and institutions more or less permanent, maintained for other than money-making objects, are not less than 600 in number. Of the hospitals, the chief are Saint Bartholomew's in West Smithfield, Guy's in Southwark, Saint Thomas's, Lambeth, the London, the Westminster, the Charing Cross, Saint George's, Saint Mary's, the Middlesex, King's College, University College, Great Northern, the West London, the Metropolitan, the German at Dalston, the Chelsea, the Greenwich, and the Royal Free Hospital. Saint Thomas's Hospital, Lambeth, a magnificent pile, was rebuilt on the Albert or Southern Thames Embankment, opposite the houses of parliament. Saint Luke's and Bethlehem (Bedlam) in Saint George's Fields (for insane persons), and the Foundling Hospital are special in their objects. There are also hospitals for special diseases as consumption, cancer, etc., hospitals for women, for children, and other hospitals.

The criminal prisons number about 12, the chief of which are Wandsworth, Holloway (for females), Pentonville, and Wormwood Scrubs prisons. Newgate, near Saint Sepulchre's Church, was demolished in 1903, and the Millbank penitentiary has also been demolished.

Cemeteries.—London cemeteries are controlled by the metropolitan borough councils or by private companies; most of those under private management are situated outside the county. Kensal Green Cemetery covers 70 acres. Kensal Green Roman Catholic Cemetery is 30

acres in extent. The City of London Cemetery is at Ilford, in Essex. Interments are also permitted in Westminster Abbey and Saint Paul's Cathedral.

Markets.—The principal markets are the Covent Garden (vegetable) Market; Billingsgate (fish) Market; Smithfield (meat and poultry) Market; the Borough Market, Southwark, for fruit, vegetables, etc.; Leadenhall Market for poultry, game, etc.; Deptford Market for foreign cattle; Islington cattle market in the Caledonian road; and the Spitalfields and Woolwich markets for vegetable products. The largest markets are controlled by the city corporation, thus stifling competition, and hence the retail markets are in the hands of costermongers who line the streets with portable stalls, wagons, etc., and are not controlled in any way by the city corporation as to the produce they sell. The Columbia Market, Bethnal Green, presented to the corporation of the city by Baroness Burdett Coutts, has not met the anticipated want. In Bermondsey is a commercial Hide and Skin Market.

Sewerage, Water, and Light.—The sewerage system consists of three main lines, at different levels, on each side of the river, running about parallel to the river, those on the n. side being designated as the high level, the low level, and the middle level sewers, and those on the s. side the high, the Effra, and the low-level sewers. There are also lines of intercepting sewers. On the n. the lines converge at Lea river, the low level sewerage being pumped to the high level, and from that point the sewerage is carried by five brick culverts to the northern outfall and reservoir, about 14 m. below London Bridge. On the s. Deptford is the converging point, the low level sewerage here being pumped to the high level, and from there the sewerage is carried to a point near the mouth of the river. The total length of sewerage pipes is nearly 300 m.

In 1904 the Metropolitan Water Board took over the eight companies which supplied London and vicinity with water. The water supplied amounts to about 250,000,000 gallons daily, of which the Thames supplies more than 122,000,000 gallons, the Lea 53,000,000 and springs and wells 44,000,000; but the supply is inadequate to meet all requirements.

Seven separate companies supply London with gas, besides which there are 13 companies and 16 local administrations that have the power to supply electricity.

Communications.—The principal railways that have their termini at London are the Great Eastern; London, Tilbury & Southend; London & Northwestern; North London; Great Western; Great Northern; Midland; Great Central; South Eastern; London, Chatham & Dover; London, Brighton & South Coast; and the London & South Western. Many of these termini are handsome and costly and have hotels in connection with them. The

Thames, besides affording means of communication by steamers with the outside world, has a local system of 30 steamboats, operated by the London County Council and inaugurated 1905, June 17. The internal means of communication is by omnibuses, cabs, tramways, and railways. There are over 11,000 licensed cabs, 3,500 omnibuses, and 1,700 tram cars. There are also the Metropolitan, the Metropolitan District, and the Electric Railway systems, known as the underground systems, and the local systems on the other lines. These underground railways are compelled to provide and maintain a subway for pipes and wires along their lines and also to arrange transfers and joint time tables with each other. There are now 27 m. of deep railways in the county open for traffic and 42 m. more have been authorized to be constructed in Greater London.

Docks.—The principal docks, which are surrounded by wharves, sheds, storehouses, warehouses, etc., are: the London, Saint Katherine's, the East India, the West India (2,600 ft. long and 500 ft. broad), and the Milwall docks, on the n. side of the river, extending from the Tower to Blackwall; the Surrey Commercial docks on the s. side between Deptford and Rotherhithe; the Victoria and Albert docks (2½ m. long) on the n. side of the river opposite Woolwich; and the docks at Tilbury on the Essex shore opposite Gravesend.

Commerce.—The port of London extends from Bridge to the Nore, and is under the care of the city corporation for sanitary purposes, under the Thames Conservancy for navigation and under various other boards for separate purposes, this division and clash of authority making it one of the worst managed ports in the world. The vessels belonging to the port number more than 1,400 sailing, and about 1,850 steam, aggregating over 2,100,000 tons. In 1904 the number of vessels in the foreign, colonial, and coasting trade entered was 5,732 sailing, and 21,366 steam, of 17,074,000 tons; the clearances were 6,431 sailing, and 21,040 steam vessels, of 16,252,000 tons. The exports of British and foreign produce in 1904 were valued at about £95,000,000, and the imports at £174,500,000; the customs revenues amounted to £14,640,000. In 1905 the total value of imports and exports was £285,005,000. London is a great port for East and West India produce; large items are tobacco, wine, sugar, tea, drugs, corn, tallow, hides, wool, and timber.

Manufactures.—London is a very large manufacturing centre, more than 1,000,000 persons being engaged in manufacturing pursuits, but it is not noted for any special line of manufacture, like Leeds, Sheffield, and Birmingham. The largest breweries, distilleries, and sugar refineries in the kingdom are situated here; books and prints are produced in enormous quantities; and the city was long the seat of the silk industry. Other important

industries are the manufacture of machinery, boots, shoes, and clothes, plate jewelry, watches, and brass-work, soap, dyes, and chemicals, furniture and cabinet-work, wall-paper, glass, musical and surgical instruments, saddlery, and leatherware, etc. The millinery, coopering, hat making, coach building, rope making, mast making, ship building, and the building and house furnishing trades are conducted on a large scale, and there are hundreds of smaller industries that employ many thousands of working people. The manufacturing district extends principally in a semicircle to the e. and s. of the city of London, from Clerkenwell to Lambeth, through Bethnal Green, Mile End, Spitalfields, Rotherhithe, and Southwark. The whole number of distinct trades or occupations is about 2,000. There are about 75 Trade Guilds, or City Companies, many of which possess large revenues; but they now exert little influence on the actual course of trade and manufactures; the chief among them, called the Twelve Great Companies, are the Mercers', Grocers', Drapers', Fishmongers', Goldsmiths', Skinners', Merchant Tailors', Haberdashers', Salters', Ironmongers', Vintners', and Clothworkers' Companies, all of which have halls, in which banquets are held.

Banking and Finance.—London is the chief money centre of the world, the financial district being located in Lombard street and its vicinity. The Bank of England is the largest bank of deposit and circulation in the world and naturally is the centre of the banking business of the Kingdom. (See BANK-BANKING.) There are about 200 private and joint-stock banks, most of which are members of the clearing house. The rateable value of London is about £43,500,000. The total net debt outstanding is about £103,250,000, though over £48,000,000 of this is for services not usually involving a charge on the rates (£37,500,000, being the debt of the Metropolitan Water Board). The annual cost of city government is about £15,000,000. The taxes are levied over the whole area in proportion to the population of the various districts, the heaviest burden thus falling on the poorer districts, though many plans have been proposed to equalize the taxation.

Government.—The government of London is vested in the county council, with the city corporation and 28 metropolitan boroughs administering local affairs. The City of London is divided into 27 wards. The lord-mayor is elected annually on Sep. 29 from among the aldermen who have been sheriffs of the city, and he is installed Nov. 9. The Court of aldermen consists of 26 members, including the lord-mayor, chosen for life by the taxpayers of the wards, one alderman representing each of 24 wards, one for 2 wards and for a nominal ward, but the latter is not elected. There are two civic sheriffs chosen annually by the 'livery' or general assembly of the freemen of London. There are 206 mem-

bers of the Common Council, one from the 27th or Bridge Ward without and the balance from the other 26 wards in proportion to their relative extent. The lord-mayor, the aldermen, and the common council form a kind of parliament for the management of city affairs, but their jurisdiction is confined to the city proper and therein they control all the city affairs except main drainage. The 'livery' of London is the aggregate of the members of the city companies, of which there are 75, though some of them represent trades that have long been extinct. Of these 12 are called great companies, from one of which the lord-mayor was formerly elected.

Outside of the ancient city the London County Council is the central authority but its authority only includes London county and does not extend over the urban districts included in Greater London. The London County Council consists of a chairman, 19 aldermen and 118 councillors, the latter being elected by the taxpayers of the several divisions into which the county is divided. The boundaries of these county districts, however, are not coincident with the boroughs. Each of the 28 boroughs into which London is divided has its own mayor, aldermen and council for local purposes. Besides the above enumerated authorities there are numerous boards which deal with certain branches of city work, such as the Boards of Guardians for poor relief; the Boards of School District Managers; the Boards of Sick Asylum District Managers; the Metropolitan Asylums Board; the Central Body and the Distress Committees for relief of the unemployed; and the Metropolitan Water Board. The city police, numbering about 1,150 men, is administered by the corporation as a municipal force; the metropolitan police (17,000 men) is not municipal and is administered by a commissioner appointed by the Home Office. The central office of the latter is New Scotland Yard, a massive building on the Embankment, near Westminster Bridge.

Bibliography.—Besant, *London* (1902); Gomme, *London 1837-1897*, and *Governance of London* (1907); Booth, *Life and Labor of the People in London* (1892); Loftie, *London City; its History, Streets, Traffic, Buildings, and People* (1891); *Index of London Streets* (1901), published by the London County Council.

LON'DON, Jack: American author: b. San Francisco, Cal., 1876, Jan. 12. He was educated at the University of California, which he left to go to the Klondike region, and in 1892 went to sea before the mast. He has tramped throughout Canada and the United States for sociological study, and spent some time in seal fishing in 1893. He has published: *The Son of the Wolf: Tales of the Far North* (1900); *The God of his Fathers* (1901); *A Daughter of the Snows; The Children of the Frost; The Cruize of the Dazzler* (1902); *The People of the Abyss* (1903); *Kempton-Ware Letters* (1903);

The Call of the Wild (1903); *The Sea-Wolf* (1904); *The Faith of Men* (1904); *The Game* (1905); *War of the Classes* (1905); *Tales of the Fish Patrol* (1905); *Moonface* (1906); *White Fang* (1907); *Before Adam* (1907); *Love of Life* (1907); *The Iron Heel* (1907); *The Road* (1907); etc. He was a war correspondent during the Russo-Japanese war 1904-5.

LON'DON CLAY, or LOWER EOCENE STRATA (q.v.): series of beds occupying the lower basin of the Thames from Hungerford to Harwich and Herne Bay; also an extensive triangular region in Hampshire and the neighboring counties, whose base extends along the coast from Dorchester nearly to Brighton, while its apex reaches to Salisbury. The beds are arranged in three sections: London Clay Proper and Bognor Beds, maximum thickness, 480 ft.; Plastic and Mottled Clays and Sands, maximum thickness, 160 ft.; Thanet Sands, maximum thickness, 90 ft.; total, 730 ft. The London Clay is rich in fossils, such as palm and other fruits, masses of wood, mollusca of genera which now inhabit warmer seas, about 50 species of fish, remains of birds and pachydermatous animals, and of numerous turtles, with crocodiles and gavials.

The Plastic Clays, or Woolwich and Reading series of Prestwich, are very variable in character, consisting chiefly of clays and argillaceous sands, which are used in manufacture of pottery.

LONDONDERRY, *lŭn'dŭn-dĕr-ĭ:* maritime county, province of Ulster, Ireland, 40 m. in length by 34 in breadth, bounded n. by the Atlantic, e. by the county Antrim, and in part by Lough Neagh, s. by Tyrone, and w. by Donegal. Pop. (1901) 144,404. The surface is irregular. From the e. boundary, it rises gradually toward the w., for about 10 m., where commences an elevated district, rising in several points to considerable height; Sawell, on the s. border, being 2,236 ft. high. On the w. side, the surface falls gradually toward Lough Foyle. The coast-line along the Atlantic is generally bold and precipitous. The shore of Lough Foyle is in most places an unvarying plain. The county may be divided longitudinally into two great geological districts, separated by the river Roe. In the w., which is mountainous, mica-slate prevails, accompanied in some places by primitive limestone. In the e., the mica-slate is overlaid by a succession of varying beds, capped, as in the adjacent Antrim district beyond the Bann, by a vast area of basalt, the dip of which, however, is the reverse of that on the opposite side of the river, and increasing in thickness toward the n., where in one place it reaches a depth of 900 ft. Many of the strata contain iron, and the ironstone of the mountain called Slieve Gallion was formerly worked, but the mining operations have been abandoned, from failure of fuel. The soil varies greatly, the larger part, with the exception of the alluvial spots

on the banks of the several rivers, and of a considerable open district which stretches s. to Tyrone, being ill-suited for any cereal crop. The principal rivers are the Foyle, the Faughan, the Roe, and the Bann. The Bann, besides being a great source of motive-power for the linen manufacture of Ulster, is noted for valuable salmon-fisheries. The chief towns are Londonderry (q.v.) City, Coleraine, Newton-Limavady, and Magherafelt. Londonderry was in ancient times the seat of the great septs of O'Loughlin and O'Neill, and of their tributary sept of O'Cahan, or of O'Kane. At the immediate period of the invasion, the English, under John de Courcy, attempted a settlement, but were forced by the O'Neills to withdraw. A small garrison within their colony was established near the Antrim border, at Coleraine, upon the river Bann; but from the 14th till the 16th centuries their tenure was little more than nominal; and though a number of forts, with a considerable garrison, were erected on the river Foyle 1600, it was not till the flight of the celebrated Tyrone and O'Donnell that the English occupation of the district was consummated, their forfeited lands being granted by the crown to the corporation of London. The incorporation, by charter, of a body to manage these lands, in 1619, led to the formation of the county, called, from this circumstance, Londonderry. Portions of the county were assigned to the several city companies, the unassigned portions being held by the society. In material prosperity the district has made rapid and marked improvement. Agriculture is considerably in advance of the majority of Irish counties; and the domestic manufacture of linen, in former times, added materially to the comfort of the population, though this manufacture has now been transferred mostly to large establishments. There is considerable export and import trade at the ports of Derry and Portrush, the seaport of Coleraine.

LON'DONDERRY, or DERRY: seaport, and corporate and parliamentary borough, and a county of a city; cap. of the county of Londonderry; on the river Foyle, 144 miles from Dublin. Pop. (1901) 39,892. Londonderry arose under the shadow of a monastery founded here in the 6th century by St. Columba. It was pillaged more than once by the Danes, and was occupied, but with many vicissitudes, by the English at the invasion. The town formed part of the escheated territory granted to the London companies, and under their management the city rose to some importance, and was strongly fortified. In the Irish war of the revolution, Londonderry threw itself earnestly into the cause of William of Orange, and closed its gates against James II. The siege of Londonderry is one of the most celebrated events in Irish history. Since that date, the city has steadily grown in extent and prosperity. It is beautifully situated on the left bank of the Foyle, upon a hill which overlooks the river. The walls are still preserved, and form an agreeable prome-

nade; they surround a part of the town one mile in circumference, but the buildings have extended beyond them. A square from which the four main streets diverge is called the Diamond. The left bank of the river is connected by an iron bridge, 1,200 ft. in length, with an extensive suburb called Waterside. The cathedral dates from 1633. The historical events above alluded to are commemorated by a triumphal arch erected 1789, and a column in honor of the Rev. George Walker, governor of the city during the memorable defense, of which he was himself the great organizer and inspirer. The walls are pierced by seven gates, giving communication with other parts of the town, the greater part of which lies outside the walls. The most important public buildings are the guildhall, the county court-house, the post-office, the custom-house, the harbor offices, the jail, Gwyn's Institution, the model school, Magee College, Foyle College, St. Columb's College, the school of science and art, the lunatic asylum, and Ebrington Barracks. The harbor is commodious, and vessels of large tonnage can discharge at the quay, which extends for nearly two miles along the river, and is provided with a graving-dock. An extensive foreign, colonial, and coasting trade is carried on with English and Scotch ports, while Glasgow transatlantic steamers call three or four times a week at the mouth of the river. The principal export is agricultural produce; the chief imports are timber, grain, iron, coal, flax-seed, flour, and guano. Shirt factories employ thousands of workers, and there are timber-mills, grain-mills, foundries, coach-factories, bread and biscuit factories, distilleries, and a ship-building yard. Intermediate education is supplied by Foyle College, founded in 1617, and by St. Columb's Catholic College. Magee College opened in 1865, besides teaching secular subjects, has a theological course adapted to young men studying for the Presbyterian ministry. The Protestant cathedral is inferior to many parish churches in England. The Roman Catholic cathedral is a massive and magnificent structure, opened in 1873.

LON'DONDERRY, Charles William Stewart Vane, third Marquis of: British military officer and diplomat: b. Dublin, Ireland, 1778, May 18; d. London, 1854, Mar. 6. He served under Sir John Moore and Sir A. Wellesley, in the Peninsula, distinguishing himself there at Talevera and other battles, and was English ambassador to Berlin in 1813. He was ambassador to Vienna the next year, and minister-plenipotentiary at its congress in 1815. By his marriage with Miss Vane he succeeded to immense estates in the county of Durham, and devoted himself to their improvement and to the welfare of his tenantry. Under his original name of Stewart he wrote the *History of the Peninsular War* (1808-13); *Narrative of the War in Germany and France, 1813-14* (1830);

and edited the *Correspondence* of Viscount Castlereagh, his brother (1850).

LON'DONDERRY, Robert Stewart, second Marquis of (better known by his courtesy title Viscount Castlereagh): 1769, June 18—1822, Aug. 12; b. Mount Stewart, Down co., Ireland. Educated at the grammar-school, Armagh, and at St. John's College, Cambridge, he entered the Irish parliament 1789, though under age. In 1796, he became Viscount Castlereagh; and in 1798 he was made chief secretary for Ireland. It was the year of the insurrection and the French invasion, on which account some allowance must be made for the terrible severities employed by the government in Ireland. Yet the cruel part that Londonderry acted or tolerated in Ireland, in suppressing the rebellion, and effecting the union, always weighed on his reputation. In 1802, he was appointed president of the board of control, in the Addington administration. In 1805, he was promoted to the seals of the war and colonial department, but resigned, with the other members of the cabinet, on Pitt's death 1806. In the following year, he resumed the office of war minister, when he organized the disastrous Walcheren expedition. Canning, then foreign secretary, attacked Lord Castlereagh on this account with much acrimony and personality. The result was that both resigned, and a hostile meeting took place between them, 1809, Sep. 21, in which Canning was wounded. In 1812, after the assassination of Perceval, Lord Castlereagh became foreign secretary, and held that post during the period illustrated by the military achievements of the Duke of Wellington. Lord Castlereagh was the soul of the coalition against Bonaparte, and it was only by his untiring exertions, and through his personal influence, that it was kept together. He represented England at the congress of Vienna 1814, at the treaty of Paris 1815, and at the congress of Aix-la-Chapelle 1818. As a speaker, he was confused and feeble; as a diplomat, he was easily mastered by Metternich (see Metternich's *Autobiography*, III., 552-560); but as a party administrator his abilities were almost unrivalled. While his foreign policy was favorable to the principles and policy of the 'Holy Alliance' abroad, he constantly recommended arbitrary and despotic measures at home. As the leader of the Liverpool government in the lower house, he carried the suspension of the Habeas Corpus Act 1817, and the 'Six Acts,' or 'the Gagging Bills,' as they were called, of 1819—measures which stamp his name with infamy. The retirement of Canning from the ministry, rather than be a party to the prosecution of Queen Caroline (1820), threw the whole weight of business on Lord Castlereagh. By the death of his father 1821, he became Marquis of Londonderry; but his mind became deranged through overwork, and he died, by his own hand, at his seat at Foot's Cray, Kent.

LONDONER, n. *lŭn'dŭn-ėr:* a native or inhabitant of London. LONDONISM, n. *lŭn'dŭn-ĭzm,* a form of speech peculiar to London.

LON'DON PRIDE (*saxifraga umbrosa*): perennial evergreen, native of s. Europe, cultivated in gardens in England, whence it rapidly spread over the fields, and abounds in Ireland, where it is known as *St. Patrick's Cabbage.* Its flower stems are a few inches high, with small pink flowers in a loose panicle.

LONDON, TREATIES AND CONVENTIONS OF: the following are the most important of the treaties and conventions concluded in London in modern times: The Quadruple Alliance, formed 1718, Aug. 2. On July 6, 1827, a treaty was signed between England, France, and Russia for regulating the affairs of Turkey and Greece, which led to the establishment of the Kingdom of Greece. On Apr. 22, 1834, a quadruple alliance was formed between England, France, Spain, and Portugal against the claims of Don Carlos and Don Miguel to the crowns of Spain and Portugal. On July 15, 1840, a treaty was concluded between England, Russia, Austria and Prussia to compel Mehemet Ali to restore Candia and Syria to the Porte; and on Nov. 27, at the conclusion of a short campaign by an Anglo-Austrian army in Syria, Mehemet Ali agreed to the terms of the treaty. A convention to close the Dardanelles against ships of war was signed on July 13, 1841; and a convention between France and England for suppression of the slave-trade, 1845, May 29. Austria, France, England, Prussia, Russia, and Sweden were parties to a treaty signed 1852, May 8, for settling the succession to the Danish crown, and guaranteeing the integrity of its dominions in relation to the duchies of Schleswig-Holstein. The rights of the German Confederation were reserved and the claims of the Duke of Augustenburg on the duchies relinquished on satisfaction. On Mar. 13, 1871, at a conference of the great powers, the neutralization of the Black Sea, effected by the treaty of 1856, was abrogated. The neutralization of Luxemburg was guaranteed by the five powers at the conference of London, 1867, May 11. The Convention of London, which was concluded 1884, Feb. 27, between the Transvaal and Great Britain, abrogated the Pretoria Convention of 1881, Aug. 3, and instead gave the Transvaal (thenceforward to be known as the South African Republic) independence in regard to its internal affairs, but reserved to the queen the right of veto over all treaties concluded 'with any state or nation other than the Orange Free State,' or 'any native tribe to the eastward or the westward of the Republic.'

LON'DON UNIVER'SITY: established by charter 1836. When University College, London, was established (1825), it was known as London University, though a mere joint-stock undertaking. A change took place 1836,

when the former London University received a charter as *University College*, and at the same time, by another charter, was established the present London University—not a building for teaching, nor an organization of teachers and scholars, but a body of persons empowered to examine candidates and confer degrees. As this second charter was valid only during 'royal will and pleasure,' it required to be renewed at the death of William IV., and the accession of Victoria; and a new charter was accordingly granted, 1837, Dec. 5. Additional powers were given, 1850, July 7, and a wholly new charter was signed, 1858, Apr. 9, instituting many changes in the functions and arrangements of London University; again a wholly new charter, 1863, Jan. 6, with supplement, 1867, Aug. 27, admitting women to certain special examinations. An influential movement in favor of the establishment of a teaching university in the metropolis arose, however, and from 1888 commissions had the matter in hand, and in 1898 the London University Act was passed to give effect to their recommendations. A commission appointed to draw up statutes and regulations for the university in accordance with the act had its work formally ratified, 1900, June 29, and the newly constituted university was established, the government granting the eastern and central portions of the Imperial Institute building to the university for its accommodation.

The eight faculties comprise arts, science, law, medicine, theology, music, engineering, and economics and political science, and the degrees conferred are LL.D., LL.B., M.D., M.B., M.S., B.S., D.SC., B.SC., D.LIT., M.A., B.A., D.MUS., B.MUS. Candidates for any degree must first pass the matriculation examination, for which the subjects are Latin, English, mathematics, general elementary science, and one other subject selected from a prescribed list, including Greek, French, German, Sanskrit, Arabic, elementary mechanics, chemistry, sound, heat and light, magnetism and electricity and botany. For the ordinary degrees of B.A and B.SC. two other examinations must be taken. In the faculty of arts the highest degree is Doctor of Literature. Examinations are held at provincial centres as well as in London. The schools of the University, or institutions in which instruction is given, are: University College and King's College in all faculties; Hackney College, New College, Regent's Park College, Cheshunt College, Wesleyan College (Richmond), London College of Divinity in theology; Royal Holloway and Bedford Colleges in arts and science; the Royal College of Science; the South-Eastern Agricultural College, Wye; the medical schools of St. Bartholomew's, the London, St. Thomas's, St. George's, the Middlesex, St. Mary's, Charing Cross, and Westminster Hospitals, the London School of Medicine for Women; the Central Technical

College of the City and Guilds Institute; and the London School of Economics and Political Science.

The supreme governing body is the Senate, consisting of the chancellor, 4 members appointed by the crown, 17 members elected by Convocation, 1 of them being the chairman of Convocation, 2 each elected by the Royal Colleges of Physicians and of Surgeons, 1 appointed by each of the four Inns of Court, and 2 by the Incorporated Law Society, 2 each chosen by University and King's Colleges, 1 representing the Corporation of London, 2 appointed by the London County Council, 1 representing the City and Guilds Institute, and 16 elected by the faculties. The Senate is debarred from imposing any religious test, or from imposing any disability on the ground of sex. There are three standing committees of the Senate, namely, the Academic Council, the Council for External Students, and a board to promote the extension of university teaching. The Chancellor, Vice-Chancellor, and Chairman of Convocation are *ex-officio* members of all three committees. Convocation consists of the Chancellor, the Vice-Chancellor, the members of the three standing committees, and the registered graduates of the university of prescribed standing. The parliamentary representative of the university is elected by the duly qualified male members of Convocation.

LONE, a. *lōn* [an abbreviated form of *alone:* Ger. *allein,* all one]: solitary; retired; without a companion; single; far apart. LONELY, a. *lōn'lĭ,* solitary; retired; addicted to solitude. LONE'LINESS, n. *-lĭ-nĕs,* solitude; retirement; seclusion. LONESOME, a. *lōn'sŭm,* solitary; secluded from society; dismal. LONE'SOMELY, ad. *-lĭ.* LONE'SOMENESS, n. *-nĕs,* state of being lonesome or solitary.—SYN. of 'lonely': secluded; sequestered; lone; lonesome; unfrequented.

LONE STAR STATE, THE: a name given to Texas from the device on its coat of arms: one star, or a 'lone star' in the centre of a wreath.

LONE WOLF (GUIPAGO): Indian chieftain of the Kiowa tribe: d. 1879. He became head chief of his tribe in 1866. He refused to bring the tribe into a reservation, in accordance with the Medicine Lodge treaty, until compelled to do so by General Custer in 1869. However, he continued to maintain an attitude of defiance, and finally headed the hostile portion of his tribe in the southern outbreak of 1874. The outbreak was finally quelled by General Mackenzie; Lone Wolf, with the other chiefs, surrendered, and from 1875 to 1878, May, was held prisoner at Fort Marion, Florida.

LONG, a. *lŏng* [Ger. *lang;* Icel. *langr,* long: F. *long*—from L. *longus,* long]: not short; drawn out in length or time; continued, as in time or sound; extending far in space or prospect; dilatory: AD. to a great length or extent; not for a short time; throughout, as all his life

long; not soon. LONGISH, a. *lŏng'ĭsh,* rather long. LONGER, a. *lŏng'gėr,* comp. deg. of *long;* of greater length: AD. for a greater duration. LONGEST, a. *lŏng'gĕst,* superl. deg. of *long;* of the greatest extent. LONG AGO, at a point far distant in the past. LONG-BOAT, strong and sea-worthy boat, formerly the largest boat carried by a ship; now generally superseded by the Launch (q.v.). LONG-BOW, a bow of the height of the archer. LONG CLOTHES, the clothes of an infant which hang loosely, and to a great extent over its feet. LONG DOZEN, one or two more than a dozen. LONG D VALVE, the long slide valve used on some of the earlier beam engines (obsolete). LONG-HEADED, endowed with forethought and sagacity; in an unfavorable sense, cunning or overreaching. LONG HOME, the grave. LONG HUNDRED, six score, or 120. LONG-LIVED, *-līvd,* living or lasting long. LONG MEASURE, a measure of length. LONG PARLIAMENT, the parliament which met 1640, Nov. 3, and was expelled by Cromwell, 1653, Apr. 20 (see CHARLES I.: CROMWELL, OLIVER). LONG-PEPPER, the dried, unripe spikes or fruit of two species of *Piper,* or pepper-vine, ord. *Piperā'cĕæ.* LONG-PRIMER, *-prĭm'ėr,* a printing-type. LONG RANGE, the greatest distance to which shot or shells may be projected by guns or mortars effectively. LONG-SHANKED, *-shăngkt,* having long legs. LONG-SIGHTED, far-seeing; sagacious. LONG-STOP, at *cricket,* one who is set behind the wicket-keeper to stop the balls which pass him. LONG-SPUN, extended to a great length; tedious. LONG-SUFFERING, a. not easily provoked; patient: N. patience under offense; clemency. LONG TOM, a sort of cradle used for washing out gold by miners. LONG TON, 2,240 pounds. LONG-TONGUED, babbling; talking over-much. LONG-VACATION, in the *Eng. courts,* a recess extending from 10th August to about the end of October. LONGWAYS, ad. *lŏng'wāz,* or LONG'WISE, ad. *-wīz,* in the direction of its length. LONG-WINDED, *-wĭn'dĕd,* tedious; protracted. LONG YARN, tedious harangue; likewise an incredible story; a sailor's tale. IN THE LONG-RUN, the whole course of things taken together; in the final result. THE LONG AND SHORT OF ANYTHING, the conclusion or summing up of a matter briefly expressed; the whole; the details as well as the general view. TO DRAW THE LONG-BOW, to exaggerate; to tell lies. *Note.*—LONG frequently forms the first part of a compound, and thus combined denotes great extent; remoteness; extended duration.

LONG, v. *lŏng*—followed by *after* or *for* [AS. *langian,* to increase, to lengthen—from *lang,* long: Ger. *verlangen,* to long for]: to desire or wish for earnestly; to wish for eagerly. LONG'ING, imp.: ADJ. having an earnest desire; having a preternatural craving: N. an earnest desire; a continual wish or craving. LONGED, pp. *lŏngd.* LONG'INGLY, ad. *-lĭ,* with continual desire.

LONG: in *OE.,* for BELONG.

LONG, Crawford W.: American physician: b. Danielsonville, Madison county, Ga., 1815, Nov. 1; d. Athens, Ga., 1878, June 16. He was graduated from Franklin College, Pa., in 1835, and from the Medical School of the University of Pennsylvania in 1839, and after practising a short time in Jefferson, Ga., removed to Athens, Ga., in 1851. He claimed to have performed on Mar. 30, 1842, the first surgical operation ever made while the patient was unconscious from inhaling ether. This appears to have been done in accordance with careful reasoning upon the subject, but although he repeated the experiment successfully in three other cases not far from that time the facts did not then become generally known. In 1844, Dec., Dr. Horace Wells in Boston demonstrated practically the principle of anæsthesia by the use of nitrous-oxide gas, and in 1846 W. T. G. Morton followed him in a similar discovery, and publicly demonstrated the feasibility of employing anæsthetics in surgical operations. In 1902, the Georgia Medical Association proposed to place a statue of Long in the National Capitol as the discoverer of anæsthesia.

LONG, Eli: soldier: b. Woodford co., Ky., 1837, June 16; d. New York, 1903. He graduated at the Frankfort (Ky.) Military School 1855; entered the army as 2d lieutenant 1st U. S. Cavalry 1856; was promoted 1st lieutenant 1861, Mar. 1, and captain May 24; commissioned colonel 4th Ohio Cavalry 1863, Feb. 23; promoted brigadier-general volunteers 1864, Aug. 18; brevetted major-general volunteers 1865, Mar. 15, and brigadier-general and major-general U. S. A. the same day; mustered out of the volunteer service 1866, Jan. 15; and retired with rank of major-general 1867, Aug. 16. Prior to the civil war his service was chiefly against hostile Indians, and 1861-65 he was active in the campaigns in the west and south. He received his brevets for services in the battle of Farmington, Tenn.; defense of Knoxville; battle of Lovejoy's Station, Ga.; battle and capture of Selma, Ala., where he led a division of cavalry in a successful charge on the Confederate intrenchments.

LONG, George, M.A.: 1800, Nov. 4—1879, Aug. 10; b. Poulton, Lancashire, England: distinguished classical scholar. He was educated at Trinity College, Cambridge, where he subsequently became fellow. In 1824, he accepted the professorship of ancient languages in the Univ. of Virginia; but returned to England 1826, to become prof. of Greek language and literature in London University. He resigned 1831. The great labor of his life was his editing (1832-43) the *Penny Cyclopædia*, to which he was also one of the most valuable contributors. In the midst of these arduous duties, Long joined the Inner Temple, and was called to the bar 1837. In 1846, he was chosen by the Benchers of the Middle Temple to deliver a three years' course of lectures on jurisprudence and civil law. In 1849, he became prof.

of classical literature in the Proprietary College at Brighton, which appointment he held till 1871. Long was one of the best classical editors that England has produced; he was also one of the first authorities on Roman law. His merits as a translator were no less great, as evinced in his *Selections from Plutarch's Lives*, etc. Long contributed extensively to Smith's Classical Dictionaries; and besides editing Cicero's *Orations* and Cæsar's *Gallic War*, published *Egyptian Antiquities*, *France and its Revolutions*, etc. In 1873, he was granted a pension of £100.

LONG, John Davis: American lawyer and politician: b. Buckfield, Oxford county, Maine, 1838, Oct. 27. He was graduated from Harvard in 1857; taught in Westford Academy for two years; then studied law at Harvard law school and was admitted to the bar in 1861. He built up a large practice and became senior member of his firm, Long & Hemenway. He has been an active member of the republican party; served in the Massachusetts legislature 1875-8, being speaker of the house from 1876-8, and was elected lieutenant-governor of the state in 1879; the next year he was elected governor, and re-elected in 1881. He was also for several years on the state house construction commission of the state. In 1883, he was elected to congress, serving there till 1889; he was then a candidate for the senate, but was defeated, and did not hold public office till appointed secretary of the navy by President McKinley in 1897. He held this office through the Spanish war, conducting its affairs with marked ability, and resigned in 1902, Mar. He published in 1879 a translation of the *Æneid* of Virgil; and other works.

LONG, Loch: body of water in w. Scotland, extending n. from the Firth of Clyde about 24 m., between the counties of Argyle and Dumbarton. It has an average breadth of about a mile; and its banks, mostly steep acclivities, abound in picturesque scenery. At its head is Arrochar.

LONG, Stephen Harriman: 1784, Dec. 30—1864, Sep. 4; b. Hopkinton, N. H.: civil engineer. He graduated at Dartmouth College 1809; was appointed lieutenant in the corps of U. S. engineers 1814, Dec.; was asst. prof. of mathematics in the U. S. Military Academy till 1816, Apr.; brevetted major and transferred to topographical engineers 1816; brevetted lieutenant-colonel 1826; appointed major of topographical engineers as a separate corps 1838, and promoted chief of topographical engineers with rank of colonel 1861. He explored the region between the Mississippi river and the Rocky Mountains 1818-23, and that of the sources of the Mississippi 1823-24; had his name given to the highest summit of the Rocky Mountains, Long's Peak; surveyed the Baltimore & Ohio railroad 1827-30; and was engineer in chief of

the Western & Atlantic railroad in Georgia 1837-40. While in the latter service he invented and patented the truss bridge since bearing his name. He was retired from army service 1863, June, but was actively employed till his death.

LONG, William Joseph, ph.d.: American Congregational clergyman and author: b. North Attleboro, Mass., 1867, Apr. 3. He was graduated from Harvard in 1892 and from the Andover Theological Seminary in 1895. He is the author of: *The Making of Zimri Bunker* (1898); *Ways of Wood Folk* (1899); *Wilderness Ways* (1900); *Beasts of the Field* (1901); *Fowls of the Air* (1901); *Secrets of the Woods* (1901); *School of the Woods* (1902); *Following the Deer* (1903); *A Little Brother to the Bear* (1903); *Northern Trails* (1905); *Briar Patch Philosophy* (1906); *History of English Literature* (1907); *Whose Home is the Wilderness* (1907); etc.

LONG'ACRE, James Barton: American engraver: b. Delaware county, Pa., 1794, Aug. 11; d. Philadelphia, 1869, Jan. 1. He was apprenticed in Philadelphia, and in 1819-31 was employed in the illustration of many of the foremost American works then published. At first with James Herring, and later independently, he published the *National Portrait Gallery of Distinguished Americans* (1834-9), many of whose engravings were from sketches by himself. In 1844, he was appointed engraver to the United States mint, and from that time until his death designed all new coins. He also remodeled the coinage of Chile.

LONGAN, *lŏng'găn* (*Nephelium Longan*): one of the finest of fruits, of the same genus with the Litchi (q.v.), but reckoned superior to it. The tree which produces it is a native of China, and of other eastern countries, at least as far west as the mountainous regions on the e. frontier of Bengal. It is much cultivated in China. The leaves are pinnate, with few leaflets, the leaflets oblong, the flowers in lax panicles. The fruit is globose, or nearly so. It is exported to w. Europe in a dried state. It has been produced in Britain by aid of artificial heat.

LONG BRANCH: N. J., city, in Monmouth county; on the Atlantic Ocean, and on the Pennsylvania, the New Jersey S., and the Central of New Jersey railroads; about 35 miles by water, 45 miles by rail, and 30 miles in direct line south of New York city. During the summer season steamers run regularly several times a day between New York and Long Branch, and electric lines connect the nearby cities and towns with this famous summer resort. Long Branch is made up of large hotels, boarding houses, cottages, bathing houses, parks, stores, and places of amusement. It has 16 churches, the Star of the Sea Academy, public schools, the Monmouth Memorial Hospital, a circulating library, and public reading rooms. The avenue along the bluff is a favorite walk.

The long beach affords excellent bathing facilities. Large bulkheads have been erected to prevent destruction of the bluff by the action of the waves. The government is vested in a commission composed of seven members, who choose the mayor from among the number. Four of the commissioners are elected by wards, three at large, and all are elected annually. There are three banks with a combined capital of $200,000.

Long Branch is one of the oldest summer resorts in the United States. As early as 1670 settlements had been made along the coast. Colonel White of the British army, who owned the land where Long Branch is located and in the vicinity, about 1770, used to spend his summer months at this place. Its proximity to New York, Philadelphia, and other cities gives it a large number of guests during the season. Pop. (1900) 8,872; (1910) 13,298.

LONGCHAMPS, *lawng-shŏng':* site of the principal race-course of Paris; part of the Bois de Boulogne (see BOULOGNE). For 400 years it has been a pleasure resort for the gay city, and is still a brilliant promenade. In the 13th century the abbey of Longchamps was founded here; and under successive kings, monasteries, nunneries, and hospitals grouped themselves around this spot to the number of 40. Great festivals, called religious, were celebrated here, attracting vast crowds from Paris. Frightful corruption grew up in the monastic establishments; and under the revolutionary regime they were broken up 1789-90 and their lands confiscated and sold. The present park and race-course attract great throngs.

LONGEVAL, a. *lŏn-jē'văl,* or LONGE'VOUS, a. *-jē'vŭs* [L. *longus,* long; *ævum,* an age]: long-lived. LONGEVITY, n. *lŏn-jĕv'ĭ-tĭ,* great length of life. The duration of life varies greatly in the same group of plants and animals, and great age in animals is by no means confined to the few higher vertebrates, such as the elephant, crocodile or parrot. Even so lowly an organism as the sea-anemone has been kept alive for 55 years. Low herbaceous annual plants in the temperate zone have co-species in the tropics which grow to be trees and are perennial. Not only are individuals of a species long-lived, but certain species and genera exhibit wonderful vitality and have persisted throughout many geological ages; such are *Lingulella, Limulus, Ceratodus,* and certain foraminifers which have persisted since the Silurian period.

Causes of Longevity.—They have to do with the nature of the physical surroundings, and also depend on slow growth and late reproduction. Botanists find that great age in plants is dependent on slow growth, gradual propagation carried on late in life, on the solidity and hardness of the tissues, etc. Examples of great age in plants are the Sequoias or 'big trees' of California, which are supposed to be over 3,000 years old; in fact, they are survivors of Tertiary times, since they occur in

a fossil state in the polar regions in British Columbia and in Europe.

The longevity of certain species of animals has been attributed by Weismann to favorable environment, including temperature. He considers that the duration of life depends first upon the length of time which is required for the animal to mature, and upon the length of the period of fertility, the latter point being determined by external conditions. Undoubtedly another factor is heredity, since longevity is directly transmissible from parent to offspring, and great age runs in families.

As to longevity in the lower animals little is known. As a rule, they live but a few weeks, months, or years. The crayfish is said to attain an age of 20 years, and possibly the lobster may live to be as old as that. Lampreys preserved in Roman fish-ponds are said to have lived to be nearly 60. The crocodile, which never stops growing through life, lives 100 years. Pike and carp reach the age of 150 years. A gigantic salamander of Japan lived at least 52 years in confinement in Germany. As to the age of birds a writer in the British ornithological journal, *Ibis*, states that the following records of birds in captivity are authentic: raven, 50; gray parrot, 40 and 50; blue macaw, 64; eagle-owls, 53; and one was then still alive at 68 years. Certain aquatic birds are very long-lived, as a heron of 60; goose, 80; mute swan, 70. To what age in free nature these birds may reach is unknown. The elephant is known to live a century and the whale is supposed to be equally long-lived. The horse rarely reaches the age of 40, though according to Lawrence 'Old Billy' of Manchester was known to have lived 59 years, and died at the age of 61, while Albertus, an old veterinarian, writes that he knew a soldier actually serving upon a horse which was 70 years of age.

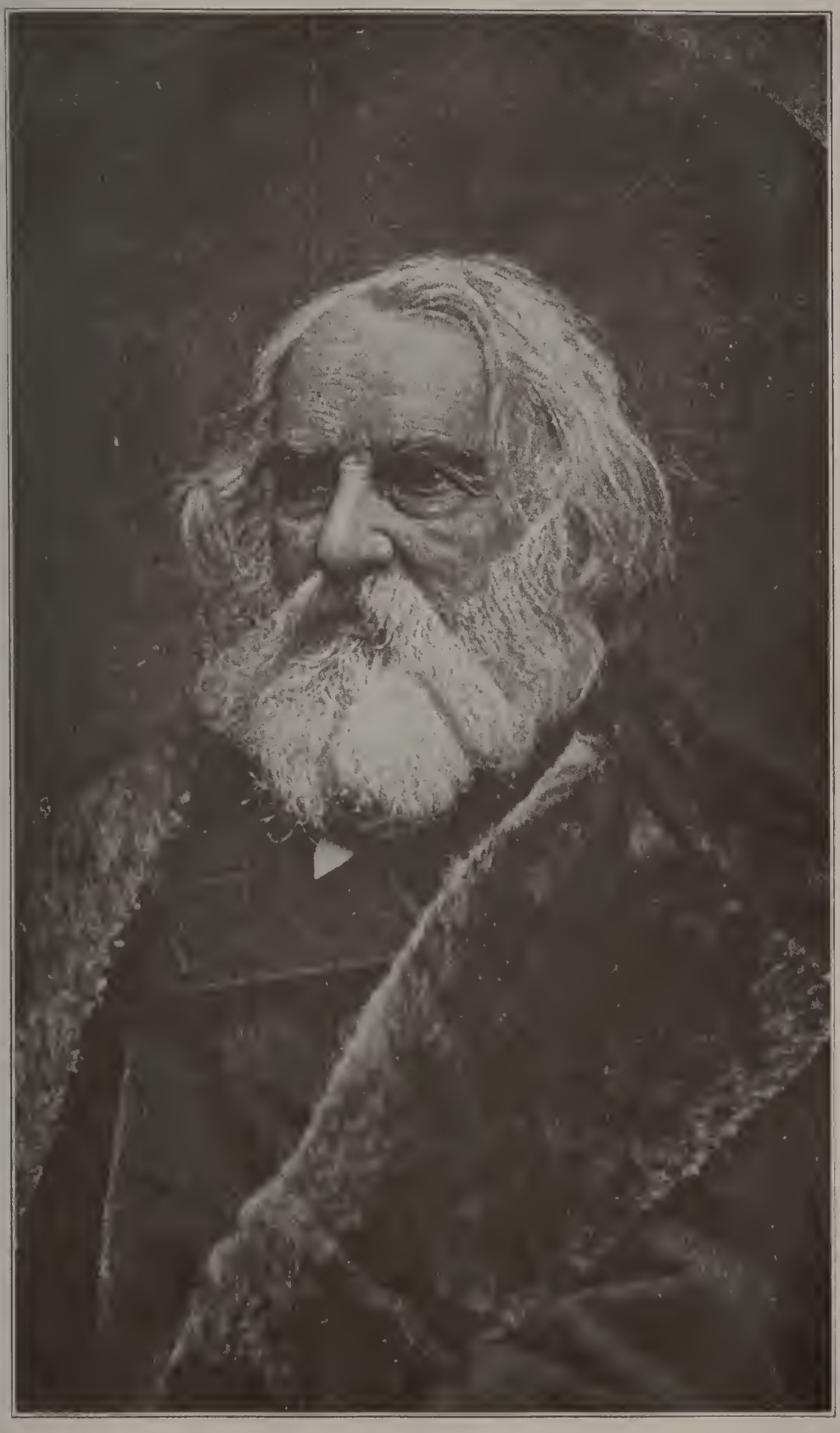
Man sometimes reaches the age of 100 years, and in rare instances even exceeds that age; while heredity undoubtedly has most to do with great age, it may be promoted in those of medium height by quiet, regular habits, moderation in eating and abstention from or moderation in the use of stimulants and tobacco. Women attain a greater age than men. To show that in man the mean duration of life may be extended by good sanitation and improvement in the general conditions of life, the mean duration of life in France has risen from 29 years at the close of the 18th century to 40 years. The United States census report for 1900 on deaths that occurred in 271 cities of 5,000 population or more shows that 18.6 persons died in 1900 out of every 1,000, whereas in 1890 the number who died in the same cities was 21 out of every 1,000. The average age at death in 1890 was 31.1 years; in 1900 it was 35.2 years. If these statistics be accurate the saving of human life that has

been achieved in a decade is enormous. Consult: Weismann, *Essays upon Heredity, etc.* (Oxford 1889); Lankester, *On Comparative Longevity in Man and the Lower Animals* (London 1870); Lolaville, *The Duration of Human Life,* in the *Popular Seience Monthly,* Vol. XX., November, 1881.

LONG'FELLOW, Ernest Wadsworth: American artist: b. Cambridge, Mass., 1845, Nov. 23. He studied under Couture in Paris, and among paintings by him may be named: *Italian Pines; Misty Morning; John and Priscilla; Old Mill at Manchester;* a portrait of his father, Henry W. Longfellow, the poet; *Love Me, Love My Dog; The Choice of Youth; Morning on the Ægean; Evening on the Nile;* etc.

LONG'FELLOW, Henry Wadsworth, LL.D., D.C.L.: poet: 1807, Feb. 27—1882, Mar. 24; b. Portland, Me.: son of Stephen Longfellow, and descendant of John Alden and Priscilla Mullines of the Mayflower. His first poem, *The Battle of Lovell's Pond,* was written 1820, at the age of 13. He entered Bowdoin College 1821, and went to Europe 1826 to qualify himself to become a professor at Bowdoin, meanwhile having published 3 prose papers and 24 poems. He studied in France, Spain, Italy, and Germany, returning 1829 to occupy the chair of modern languages and literature for five years. During this period he contributed to *The North American Review,* and published his version from the Spanish of the *Coplas de Manrique,* and his book of European life, *Outre-Mer.* He was married 1831 to the daughter of Judge Barrett Potter, and, 1834, went again to Europe, where his wife died. Returning, 1836, he took the chair of modern languages in Harvard University, which he occupied for 17 years. 1837 he opened his second period of poetic composition with the poem *Flowers,* though meanwhile he had written more than 40 translations of French, German, Spanish, Italian, Danish, and Swedish poems, most of which were embodied in *The Poets and Poetry of Europe* (1845), a masterly collection of representative European poetry, with biographical and critical comments. In 1839, he published his volume of poems, *Voices of the Night,* and his prose romance, *Hyperion;* his *Ballads and Other Poems* (1841); *Poems on Slavery* (1842), also visiting Europe a third time; *The Spanish Student,* a drama (1843). The same year he married Miss Frances Elizabeth Appleton, of Boston, buying the historic Cragie house, at Old Cambridge, which he occupied the rest of his life. There his five children were born—Charles A., who served as lieut. during the civil war; Ernest, well-known as an artist, and three daughters, Edith (wife of Richard H. Dana), Alice, and Anne;—and here, 1861, his wife met her tragic death by fire. In 1846, appeared *The Belfry of Bruges, and Other Poems; Evangeline,* perhaps on the whole his greatest poem (1847); his last

prose work, *Kavanagh, a Tale* (1849); *The Golden Legend* (1851), the first completed, but the second in order, of the trilogy *Christus;* the other two being *The New England Tragedies* (1868) and *The Divine Tragedy* (1872). He retired from his professorship to apply himself exclusively to literary work, 1854. Then came a period of fresh productiveness, during which appeared *The Song of Hiawatha* (1855), suggested by the Finnish epic, *Kalevala,* whose metre and general structure it follows, giving us the nearest approach that we have to an American epic; and *The Courtship of Miles Standish* (1858), a poetical version of the early days of the Mayflower and the first settlers of Mass., among which the poet's ancestors were prominent. *The Tales of a Wayside Inn* were published 1863, and *Flower-de-Luce* 1867. After his wife's death, however, he applied himself chiefly to his translation of Dante's *Divina Commedia,* with copious and scholarly notes, which appeared 1867, and is the best version of that poem in our language, and by many considered the greatest of all his literary achievements.—In 1868, he made a fourth journey to Europe and was everywhere received with marked honor, especially in England, where his poems are more popular than those of any other American poet, and where on this visit both Cambridge and Oxford gave him the degree D.C.L., that of LL.D. having been conferred on him by Harvard 1859. He published *Three Books of Song* (1872); *Aftermath* (1873); *The Hanging of the Crane* (1874); *The Masque of Pandora* (1875); *Keramos* (1878); *Ultima Thule* (1880). Besides this original work, he compiled and edited during these later years 31 vols. of *Poems of Places,* and composed enough of his own to give us the posthumous vol. of lyrics, *In the Harbor* (1882); and a considerable fragment of a dramatic poem, *Michael Angelo* (1883). His poetry is characterized by invariable fitness of form, faultless finish and elegance, combined with great simplicity of language and lucidity of style. Its moral tone is always pure and elevated; and everywhere his rare scholarly refinement of sentiment and expression is manifest. His gentle, amiable, and sympathetic spirit was infused into his verse, winning the reader's love for the poet as much as his admiration for his poetry. He appeals strongly but quietly to all the deeper feelings and affections of the human heart, and hence is pre-eminently the poet of the people, there being probably no other poetry in the language that is read as much as his. Many of his works have been translated into every language of Europe, and one or two languages of Asia. See *Works,* Riverside Edition, 11 vols.; *Lives,* by Stoddard and by Underwood; *Life, with Extracts from his Journals and Correspondence,* by the Rev. Samuel Longfellow (q.v.), brother of the poet; Robertson, *Longfellow* (1887); Wendell, *Literary History of America* (1900); Carpenter, *Henry*



HENRY WADSWORTH LONGFELLOW.

Wadsworth Longfellow (1901); Higginson, ***Longfellow,*** in *American Men of Letters* series (1902).

LONGFELLOW, Samuel: American Unitarian clergyman and poet: b. Portland, Maine, 1819, June 18; d. Cape Elizabeth, Maine, 1892, Oct. 3. He was a younger brother of H. W. Longfellow, and was graduated from Harvard in 1839 and from Harvard Divinity School in 1846. After his ordination to the ministry he was pastor of the Unitarian Church at Fall River, Mass., 1848-51; of the 2d Unitarian Church in Brooklyn, L. I., 1853-60; and of the Unitarian Church at Germantown, Philadelphia, 1877-82. His remaining years were spent in Cambridge. His fame as a poet has been overshadowed by that of his brother, but he had a very distinct poetic gift, and his hymns, of which he wrote many, are among the best of modern religious lyrics and are found in hymnals of many denominations. He possessed a gentle, unaggressive nature, but held his convictions firmly, nevertheless, and was fearless in the expression of his religious and poetical opinions, his views being more often radical than conservative. His published works include: *A Book of Hymns,* with S. Johnson (1846), a compilation revised in 1864 as *Hymns of the Spirit; Thalatta: a Book for the Seaside,* with T. W. Higginson (1853), a verse compilation partly original; *Life of Henry Wadsworth Longfellow* (1886); *Final Memorials of Henry Wadsworth Longfellow* (1887); *Essays and Sermons* (1894); *Hymns and Verses* (1894). Consult: May, *Memoir and Letters of Samuel Longfellow* (1894).

LONGFELLOW, William Pitt Preble, s.b.: American architect: b. Portland, Maine, 1836, Oct. 25. He is a nephew of Henry W. Longfellow (q.v.), and was graduated from Harvard in 1855. He was assistant architect of the Treasury Department 1869-72; is a fellow of the American Society of Architects, and was the original editor of *The American Architect.* He was chairman of the architectural section of the Board of Judges of the World's Columbian Exposition, 1893. He has published: *Abstract of Letters on Perspective* (1889); *Cyclopedia of Architecture in Italy, Greece and the Levant* (1895), a work of great value; *The Column and the Arch* (1899); *Architectural Essays; Applied Perspective* (1901); etc.

LONG'FIN: a large and important sea-fish (*Chilodactylus macropterus*) about the Cape of Good Hope. It represents a family, having several other food-fishes of value in the Indian Ocean and Australian seas, all characterized by elongation of one of the rays of each pectoral fin.

LONGHENA, *lon-gā'nâ,* Baldassare: Italian architect: b. Venice about 1604; d. there 1682. He carried to its highest pitch the Venetian baroque, in which he followed to some extent his predecessors Palladio and

Scamozzi. In the plastic accessories of his buildings he was far less original. He built in 1631-56 the great church of Santa Maria della Salute (commonly called 'The Salute') an octagonal structure with two domes. The churches of Santa Giustina, San Tomà, and Santa Maria ai Scalzi; the Palazzo Rezzonigo and the staircase of the cloister of San Giorgio Maggiore were also his work.

LONGHI, *lŏng'gē,* GIUSEPPE: Italian engraver and painter: b. Monza, 1766, Oct. 13; d. Milan, 1831, Jan. 2. He studied line-engraving in the school of Vangelisti at Milan, was for a time at Rome, but later established himself at Milan, where he was a professor in the Academy from 1798. He was unexcelled among contemporary engravers in excellence of portraiture. Among his plates are: *Bonaparte,* after Gros; *The Philosopher,* after Rembrandt; *The Vision of Ezekiel,* after Raphael; *Washington,* after Stuart; *Eugène Beauharnais,* after Gérard; and *The Emperor Franz I.,* after Schiavoni. He published *Teoria della Calcografia* (1830), once well known.

LONGICORNES, *lŏn-jĭ-kawr'nēz:* family of tetramerous coleoptera, containing a vast number of species, among which are many of the largest and most splendid beetles. They are remarkable for the length of their slender antennæ, which are often longer than the body. They all feed on vegetable food, some on leaves, some on roots, and are mostly inhabitants of forests; the females depositing their eggs, by means of a long, strong, horny ovipositor, beneath the bark of trees, on the wood of which the larvæ feed. The longicornes abound chiefly in warm countries, particularly in S. America; the number of species in some temperate countries, however, is considerable; but some of those so reckoned have probably been imported from foreign countries in the larva state, in timber, to which they often do great injury.

LONGIMETRY, n. *lŏn-jĭm'ĕ-trĭ* [L. *longus,* long; Gr. *metron,* a measure]: the art or practice of measuring distances or lengths.

LONGINUS, *lŏn-jī'nŭs,* DIONYSIUS CASSIUS: Platonic philosopher, eminent critic, and famous rhetorician: b. according to some, at Emesa, in Syria, and according to others, at Athens, about 213—probable conjecture Emesa, about 210; d. 273. In his earlier years, he travelled much in the company of his parents, and made the acquaintance of many celebrated scholars and philosophers. He studied Greek literature at Alexandria, where he was pupil of Ammonius and Origen, and subsequently settled as a teacher of rhetoric in Athens, where he soon acquired great reputation. His knowledge was immense: he was called 'a living library' and a 'walking museum,' but his taste and critical acuteness were no less wonderful. He was probably the best critic of all antiquity. In an age when Platonism was giving place to the semi-

oriental mysticism and dreams of Neo-Platonism, Longinus stands conspicuous as a genuine disciple of the great master. Clear, calm, rational, yet lofty, he despised the fantastic speculations of Plotinus, who consequently would not admit that Longinus was a philosopher, but —since he stooped to criticise the diction and style of Plato—pronounced him a mere philologist. In the latter years of his life, Longinus accepted the invitation of Queen Zenobia to undertake the education of her children at Palmyra; but becoming also her prime political adviser, he was beheaded as a conspirator with her against Rome, by command of Emperor Aurelian, 273. Longinus was a heathen, but a generous and tolerant heathen. Of his works, there remain for the most part only fragments of letters and criticisms; for the very important treatise *Peri Hypsous* (On the Sublime), formerly unhesitatingly ascribed to him, is of somewhat doubtful authorship, though certainly the circumstantial evidence is so much in favor of Longinus as the author as to justify its provisional ascription to him. See Egger, *Longini quæ supersunt* (1837); Vaucher's *Etudes Critiques* on Longinus (1854); and Jahn's edition of the *De Sublimitate* treatise (1867). There are several English translations.

LONGIPENNATÆ, n. plu. *lŏn'jĭ-pĕn-nā'tē,* or LONGIPEN'NES [L. *longus,* long; *penna,* a wing]: in Cuvier's ornithological system, that section of ord. *Palmipedes* characterized by long wings and great power of flight. The wings are often very narrow. They all are sea-birds, and many venture to a great distance from shore. Their hind-toe is small and free, or lacking. They cannot dive and pursue their prey under water, but they swim well, and their movements in the air are very graceful. Petrels, shearwaters, gulls, terns, noddies, skimmers, and albatrosses are examples. LON'GIPEN'NATE, a. *-pĕn'nāt,* long-winged—applied to birds.

LONGIROSTRAL, a. *lŏn'jĭ-rŏs'trăl* [L. *longus,* long; *rostrum,* a beak or bill]: long-beaked—applied to birds. LON'GIROSTRES, n. plu. *-trēz,* tribe of birds of ord. *Grallæ,* having generally a long, slender, feeble bill, and inhabiting sea-shores and marshy places, where they wade in mud or ooze, seeking worms and other food. To this tribe belong snipes, woodcocks, curlews, god-wits, sandpipers, etc.

LONG ISLAND: New York, the southeasternmost portion of the state, connected by three bridges and several ferries across East river with Manhattan Island; is bounded on the north by Long Island Sound (q.v.), separating it mainly from the south shore of Connecticut, The Atlantic Ocean bounds it on the east and south, while The Narrows, New York Bay, and East River, already mentioned, connecting the ocean with the sound, complete the boundaries on the west and north-

west. Several small islands around the coasts are included in its political boundaries, the best known being Coney, Rikers, Berrian, South Brother, Fire, Barren, Shelter, Gardiner, Fisher, and Plum. Long Island has a maximum length of about 120 miles, varies in width from 12 to 23 miles, and has an area of 1,682 square miles. It is divided into four counties, Nassau, Suffolk, Queens, and Kings, the last two metropolitan boroughs of New York city, occupying a considerable portion of the western end of the island. Queens county embraces the populous centres of Long Island City (q.v.), Maspeth, Corona, Flushing, Jamaica, Woodhaven, and Far Rockaway, while the boundaries of Kings county are those also of the former city, now the metropolitan borough, of Brooklyn (q.v.).

The 280 miles of coast line are indented with numerous bays and inlets. A deep bay, 30 miles long, divided into Great and Little Peconic, and Gardiner's bays, splits the eastern end of the island into two long narrow peninsulas, the southern terminating at Montauk Point, and the northern at Orient Point, with Plum and Fishers islands extending beyond. Great South Bay, from two to five miles broad, extends along the southern coast for nearly half the length; it is separated from the Atlantic Ocean by Fire Island or Great South Beach, a sandy strip from a quarter of a mile to one mile wide, communicating with the ocean by several openings. Jamaica Bay is on the south coast also, New York Bay on the west, while along the north coast are Flushing, Little Neck, Manhasset, Hempstead, Oyster, Huntington and Smithtown bays. A government system of lighthouses, life-saving stations, fortifications, and masked batteries extends around the coast.

The level seacoast of the south side, with its extended views of bay and the broad ocean, contrasts sharply with the hilly north side and its deep indentations, looking out upon the land-locked sound. The rolling stretches of Montauk Point and Shelter Island afford another contrast to the many square miles of scrub oak and level, sandy plains in the centre of the island. The island reaches a height of over 380 feet in West Hill, Suffolk county, and in Harbor Hill at Roslyn, the loftiest points in the range of glacial hills that extends along the northern coast. The island is well watered by several small streams, the Peconic, 15 miles long, flowing into Great Peconic Bay, being the largest. Natural ponds or lakes abound, and there are about 116 square miles of salt marsh throughout the island. The eastern portion especially is well wooded and noted for its pine forests well stocked with deer and other game. Like other insular positions the climate is milder than that of the adjacent continent, the average temperature being several degrees below that of the metropolis, while the hottest days are tempered by cool and refreshing breezes

from ocean or sound. The soil generally is productive and under a high state of cultivation. In the southern flat lands it is of a light, sandy nature, well calculated for raising grain, especially Indian corn; in the hilly north the soil is strong and adapted to the culture of grain, hay, and fruits. Market gardening for metropolitan demands constitutes the principal portion of the agricultural industry of Kings and Queens counties. Oyster, clam, and other fisheries are important sources of food supply.

The Long Island and other railroads give easy access from New York city to the remotest parts, Montauk Point, the southeasternmost point, being only three hours away. Long Island is noted especially for exceptional opportunities, embracing all sorts of summer recreation. The roadways are admirably adapted to all forms of locomotion, and riding, driving, automobiling, and wheeling are equally desirable methods for enjoying the region. In the numerous villages and towns along Jamaica Bay, Great South Bay, Peconic Bay and the Sound, there are ample facilities for sailing, rowing, fishing, and bathing, which are fully utilized. For golfing, lawn tennis, and all other forms of outdoor sport and recreation, every possible facility is found, and the golf courses, especially at Garden City and Shinnecock, are notable. The chief seaside resorts along the south coast are Bath Beach, Bensonhurst, Coney Island, Brighton, Manhattan, Rockaway Beach, Far Rockaway, Long Beach, Fire Island, Patchogue, and Montauk Point; along the north coast are Greenport, Port Jefferson, Coldspring Harbor, Oyster Bay, Glen Cove, Seacliff, College Point and North Beach. The population of Long Island in 1900 was 1,452,611, 1,166,582 of this number residing in Brooklyn borough.

When discovered in 1609 by Hudson, Long Island was inhabited by 13 tribes of Algonquin Indians, by whom the island was variously called Panmancke, Wamponomon, Mautowacks, and Sewanhacky. A few descendants mixed with negro blood, and retaining no knowledge of their ancient language, dwell near Montauk Point and Shinnecock Neck. French Protestants from near the river Waal, in the Netherlands, made the first settlement in 1625 under Dutch protection, and immigrants from New England established themselves in different localities shortly afterward. Lange Eylandt, the Dutch name, was changed by the colonial legislature to that of Nassau, a name which survives in one of the counties, but was never adopted by the people for the island. Long Island was a busy base of military movements during the revolutionary war, and the battle of Long Island (q.v.) is the principal event in its history.

LONG ISLAND, Battle of: between British and Americans in the revolutionary war 1776, Aug. 26. After the British evacuated Boston, Washington fortified New

York and its approaches. He entrusted the defense of Long Island to Gen. Greene, who constructed a line of entrenchments and redoubts near Brooklyn, erected a battery at Red Hook, and a fort on Governor's Island. The battle was fought mainly between these entrenchments and the s. side of the island, where the wooded range of hills was crossed by three roads; one near the Narrows to Gravesend Gay; the central one through Flatbush; the third through Bedford to Jamaica. 1776, Aug. 22, 9,000 British under Sir Henry Clinton landed at Gravesend, but finding the central pass occupied, awaited reinforcements. The Americans were commanded by Gen. Sullivan, who had superseded Greene because of the latter's being sick. Aug. 24, Washington visited the lines and appointed Gen. Putnam to the command. Aug. 25 the British reinforcements arrived, and active operations commenced next day. Aug. 26, making a feint of taking the passes near the Narrows and through Flatbush, Clinton quietly took possession of the one to Bedford, which the Americans had neglected properly to guard. His descending this road was the signal for an advance along the whole line. Though the Americans fought bravely, they were taken at such disadvantage that a considerable body of them under Sullivan were forced to surrender, as was also the command of Stirling, who had opposed the British left. The British were now before the American works, and proceeded to intrench themselves and plant batteries. Seeing no hope of maintaining himself under the circumstances, especially as the British fleet threatened to come up the river and cut off Brooklyn entirely, Washington, who now personally commanded the Americans, decided to recross with his army and abandon Long Island. This he did during the night of Aug. 29, and from that time on to the close of the war the island remained in the hands of the British.

LONG ISLAND CITY: a former city and capital of Queens co., N. Y.; now a part of the borough of Queens, New York City, on the East river and Newtown creek. It is separated from Brooklyn by Newtown creek; has a water front on the creek and East river of 10 miles; is connected with New York by ferries; and is connected with Brooklyn by several lines of street railroads. The first settlements within the present city limits were made by the Dutch in 1640 and a number of villages gradually grew up in the vicinity. Of these villages, Astoria, Blissville, Dutch Kills, Hunter's Point, Middletown, Ravenswood, and Steinway were in 1870 united under one charter to form Long Island City. The chief industries are oil-refining, terra-cotta work, manufactures of asphalt, carpets, chemicals, pianos, and rugs. In the census of 1900 the statistics of manufactures were included in those of New York City. Astoria contains manufactories of pianos, jewelry, carpets, and carriages,

and has a post office; Ravenswood and old Long Island City have post offices. Hunter's Point has extensive petroleum warehouses and refineries and large chemical works. The Astoria and Ravenswood districts are beautifully located, laid out with fine streets and drives, and have many costly residences, occupied chiefly by New York and Brooklyn business men. Long Island City has the county court-house, expensive waterworks, gas and electric light plants, a large number of churches and schools, and several hospitals. Upon the completion of the Pennsylvania railroad tunnels under the North and East rivers and Manhattan from Jersey City, Long Island City will be the eastern terminus of the Pennsylvania railroad. Pop. (1900) 48,272.

LONG ISLAND SOUND: body of water separating Long Island on the s. from Conn. and N. Y. on the n.; about 110 m. long, and 2 to 20 m. wide. At its e. end it connects with the Atlantic ocean by a passage known as the Race; and at its w. extremity it contracts into the East river which connects with New York Bay and the Hudson river and, through the Narrows, with the ocean. Its e. portion is everywhere less than 200 ft. deep; its w. portion, w. of the mouth of the Connecticut river, is in general 75 to 100 ft. deep.

The coast on the north is irregular, and has a number of small bays and capes. The south or Long Island coast is irregular from East river to near Port Jefferson; and from Port Jefferson to Orient Point the coast line has few indentations. The largest indentations on the north side are New Haven Harbor and Pelham Bay. There are several good harbors at the mouths of rivers and in places sheltered by small islands. On the south shore the principal indentations are Smithtown, Northport, Oyster, Manhasset, Little Neck, and Flushing bays. The north coast is fringed by small rocky islands or reefs. In the western part of the Sound there are a number of small islands, which have been improved so as to be desirable resorts or residential locations. Chief among these are Glen Island and City Island. At the entrance to East river there are a number of islands used chiefly by the health department of New York city. At the east entrance is a group of islands which extend diagonally from Long Island to the state of Rhode Island. The largest of this group is Fishers Island. (See NEW YORK CITY.) The chief rivers which flow into the Sound, all from the north, are Connecticut, Mystic, Thames, and Housatonic. Immense numbers of coasting vessels make the Sound their thoroughfare; but large ocean steamships usually enter New York harbor through the Narrows, because of the narrow and crooked passage through 'Hell-gate' at the w. end of the Sound.

LONGITUDE, n. *lŏn'jĭ-tūd* [F. *longitude*—from L. *longitud'ĭnem*, length of time or space—from *longus*, long: It. *longitudine*]: the angular distance east or west of any

place on the earth's surface from a certain fixed point or meridian—in Eng., and often in some other countries, that point is the Royal Observatory at Greenwich, near London—but sometimes the cap. of a country, e.g. Paris, Washington, is taken as the point (see LATITUDE). LON'GITU'DINAL, a. *-tū'dĭ-năl*, pertaining to longitude or length; extending or running lengthwise. LON'GITU'DINALLY, ad. *-lĭ*. LONGITUDE FROM, the longitude of the place sailed from. LONGITUDE IN, the longitude of the place sailed to. THE LONGITUDE OF A HEAVENLY BODY, the arc of the ecliptic intercepted between the first point of Aries, and the secondary circle to the ecliptic, which passes through the place of the body. CIRCLES OF CELESTIAL LONGITUDE, great circles of the celestial concave passing through the poles of the ecliptic, and so called because they severally mark out all points which have the same longitude—also called CIRCLES OF LATITUDE, because latitudes are measured upon them.

LONG LAKE: body of water in the n.e. of Hamilton co.; one of the Adirondack lakes; 18 m. long, and 3 m., or less, in width; 1,575 ft. above sea-level. Its length and comparative narrowness make it resemble a river, and it is an important line of travel by boat through the region. The scenery is picturesque, and there are some fine views of distant mountains.

LONGLEY, JAMES WILBERFORCE, D.C.L.; Canadian politician: b. Paradise, Nova Scotia, 1849, Jan. 4. He was educated at Acadia College, N. S., studied law in Halifax and was called to the bar in 1875, becoming Queen's counsel in 1892. He was chief editorial writer for the *Acadian Recorder* 1873-87, and was managing editor of the Halifax *Morning Chronicle* (1887-91). He was first elected to parliament in 1882, and has been returned without interruption since that time; entered the government in 1884; was attorney-general 1886-1905; and since 1905 has been a judge of the supreme court of Nova Scotia. In 1898 he was elected a fellow of the Royal Society of Canada. He has written *Love; Socialism, its Truths and Errors; The Greatest Drama; A Material Age; Canada and Imperial Federation; Religion in the Nineteenth Century; Life of Joseph Horne;* etc. He materially assisted the passage of the bill for the abolition of imprisonment for debt.

LONG'MANS: London publishers for many years identified with high-class literature. Thomas Longman (1699-1755) was apprenticed to John Osborne, bookseller, Lombard street. Longman bought the business of William Taylor, publisher of *Robinson Crusoe*, conducted in Paternoster Row, whence he moved in 1726 to the present site. Longman was a shareholder in many important publications, such as Boyle's *Works*, Ainsworth's *Latin Dictionary*, Chambers' *Cyclopedia*, and Johnson's *Dictionary*. His nephew and successor, Thomas Long-

man (1731-97), published a new edition of Chambers'. With Thomas Norton Longman (1771-1842) the firm reached a high degree of literary and commercial prosperity. Lindley Murray's *Grammar* was published and proved valuable, while the firm had literary connection with Wordsworth, Southey, Coleridge, Scott, Moore (to whom it paid £3,000 for *Lalla Rookh*), Sidney Smith, and other leading authors. In 1826 the *Edinburgh Review* became the property of Longmans. The next important members of the firm were Thomas Longman (1804-79), the eldest son of T. N. Longman, who issued a beautifully illustrated New Testament, and William Longman (1813-77), the third son, who wrote *Lectures on the History of England* (1859); *History of the Life and Times of Edward III.* (1869); and *History of the Three Cathedrals of St. Paul* (1873). The events of this generation were the publication in succession of Macaulay's *Lays of Ancient Rome* (1842); *Essays* (1843); and *History*. The famous check for £20,000 paid to Macaulay as his share of the profits of the 3d and 4th volumes for the first few months (1855) is still preserved. The partners of the fifth generation were Thomas Norton Longman and George Henry Longman, sons of Thomas Longman, and Charles James Longman and H. H. Longman, sons of William Longman. One of the earliest ventures of this time was Disraeli's *Endymion*, for which the author received £10,000. Lord Beaconsfield's other works had come into possession of the firm in 1870, when they published his *Lothair*. A magazine—*Longman's*—was also established by the house.

LONGOBARDS. See LOMBARDS; LOMBARDY.

LONG OF, prep. *lŏng ŏv* [from *along of* (see LONG 1)]: in *OE.*, owing to; by the fault of.

LONG PARLIAMENT: in English history, a parliament summoned by Charles I. in 1640. Largely liberal and anti-royal, thanks to the campaigning efforts of John Pym, it declared ship-money illegal, claimed the right of taxation as belonging solely to the commons and not to the crown, passed the triennial bill, and attacking the king's favorites put Laud in prison and Strafford to death. In November, 1641, passing successfully a reactionary crisis, it adopted the Great Remonstrance, and in January of the next year refused to obey the king's order to surrender 'the five members,' its leaders, Hampden, Pym, Hollis, Haselrigg and Strode. Thus it brought on the civil war, through which it continued in power, losing, however, many members upon the introduction of Presbyterianism, and nearly 100 Presbyterians in 1648 after its attempted compromise with the king, which aroused the anger of the parliamentary army. The handful of members left composed the 'Rump,' which was nominally in power until dissolved in 1653 by Cromwell, after whose death it briefly reconvened in 1659 and 1660. See CROMWELL.

LONG'S PEAK: one of the highest elevations of the Rocky mountains, in Colorado, about 48 miles northwest of Denver. Its height is 14,271 ft. It was named in honor of Col. Stephen Harriman Long (q.v.).

LONG'SPURS: a group of large finches, typically of the genus *Calcarius,* distinguished by the great size of the claw of the hind toe. All are northern birds, frequenting open lands and inclined to form into flocks. The Lapland longspur (*C. lapponicus*) is known throughout the northern parts of Europe and Asia as well as America, and breeds only in the extreme north, coming south of the area of deep snow in winter, but always rare and irregular in the United States. Three other species are restricted to North America, one of which, the chestnut-collared (*L. ornatus*) is well known in the west, as it breeds abundantly on the plains of Dakota and Montana, making its nest on the ground. All are handsome birds, with a mixture of colors, in which black, chestnut, red and buff are conspicuous. Detailed descriptions of all may be found in Dr. Coues' *Birds of the Northwest* (1874).

LONG'STREET, Augustus Baldwin: son of William Longstreet (q.v.), American jurist and author: b. Augusta, Ga., 1790, Sept. 22; d. Oxford, Miss., 1870, Sept. 9. He was graduated at Yale College in 1813, began the study of law at Litchfield, Conn., and was admitted to practice in Georgia in 1815. In 1821 he represented the county of Greene in the legislature, and in 1822 was made judge of the superior court of Ocmulgee circuit. Declining re-election to the bench, he returned to the bar, and was especially distinguished for his efforts and successes in criminal cases. In 1822 he removed to Augusta, Ga., and founded the *Sentinel.* In 1838 he entered the ministry of the Methodist church, and was president of Emory College 1839-48 and subsequently of the University of Mississippi. His works include: *Georgia Scenes,* a series of broadly humorous sketches, long popular (1840); *Letters from Georgia to Massachusetts.*

LONG'STREET, James: soldier: b. Edgefield district, S. C., 1821, Jan. 28; d. Gainesville, Ga., 1904, Jan. 2. He graduated at the U. S. Milit. Acad. 1842; served in the military occupation of Texas 1845-46; took part in the principal battles of the Mexican war, in which he was several times wounded, and for gallantry was promoted 1st lieutenant and brevetted captain and major; was promoted captain and served as adjutant and paymaster till 1861, June 1, when he resigned; and was soon afterward appointed brigadier-general in the Confederate army. He commanded a brigade in the first battle of Bull Run; was promoted major-general 1862; commanded the rear-guard of Gen. Jos. E. Johnston's army on the retreat from Yorktown; made a stand at Williams-

burg 1862, May 2, and held it till the main Confederate army escaped toward Richmond; commanded the 1st corps of the Army of Northern Virginia in the second Bull Run, and won the day by relieving Jackson; held the Confederate left at Fredericksburg, and commanded the right wing of the Army of West Virginia at Gettysburg; and on being transferred to the Army of the Tennessee under Gen. Bragg commanded the left wing at Chickamauga. In 1863, Nov., he attempted to capture Knoxville by siege and assault, but failed. Early in 1864 he rejoined Gen. Lee in Virginia; was wounded by his own men in the Wilderness May 6 and disabled till Oct.; commanded the 1st corps Army of Northern Virginia in Lee's final campaign around Petersburg and Richmond; and was included in the surrender at Appomattox. After the war he settled in New Orleans; was appointed by Pres. Grant surveyor of the port 1869 and postmaster 1871; removed to Georgia 1875; and was supervisor of internal revenue; from 1880-1 was United States minister to Turkey; from 1881-4 was United States marshal of Georgia; and in 1898 was appointed a United States railroad commissioner. He wrote *From Manassas to Appomattox* (1896).

LONGSTREET, William: American inventor: b. New Jersey 1760; d. Georgia 1814. He settled in Augusta, Ga., in early life and on Sept. 26, 1790, wrote a letter to Thomas Telfair, of Savannah, asking his assistance in raising the means to construct a boat to be propelled by steam. This letter was published in the Savannah and Augusta newspapers, but funds were not immediately obtained, though he stated his entire confidence in the success of the scheme. He was subsequently furnished with the necessary means for experiment, and constructed a small model boat, upon a plan very different from Fulton's, which went on the Savannah river against the stream at the rate of five miles an hour. Cotton had previously been ginned in two rollers, not quite one inch in diameter, which caught the fibres, pressed out the seed, and delivered the clean cotton on the other side, where it was taken by the ginner's hand, and deposited in a bag attached to his person. Longstreet invented and patented the 'breast roller,' moved by horse power, which entirely superseded the old method. The inventor set up two of his gins in Augusta, which were propelled by steam, worked admirably, and promised him a fortune. They were, however, destroyed by fire within a week. He next erected a set of steam mills near St. Mary's, Ga., which were destroyed by the British in an invasion in the war of 1812. These disasters exhausted his resources and discouraged his enterprise, though he was confident that steam would soon supersede all other motive powers.

LONG-TAILED DUCK. See Old Squaw.

LONG TOM: (1) the name given a 42-pound gun cap-

tured by the British in 1798 from the French battleship Hoche. It was afterward purchased by the Americans and used in the attack on Haiti by the French in 1804, and remained idle till 1812, when it was placed on the General Armstrong. This vessel ran the British blockade at New Orleans 1814, Sept. 9, and put into the bay near Horta, Fayal, being disabled in an encounter with a British squadron. Here the gun was dismantled and remained till Colonel Reid, son of the commander of the General Armstrong, had it brought back to New York 1893, April 18. (2) An apparatus for washing gold from the earth or gravel in which it is found. It consists of a wooden trough, from 12 to 25 ft. long and about a foot wide. At its lower end it widens, and its floor there is of sheet-iron pierced with holes half an inch in diameter, under which is placed a flat box a couple of inches deep. A stream of water is kept running through it by means of a hose; the dirt is shoveled in, and stirred at the lower end, where the earth and gravel fall through the sieve into another box, where they are again sifted. The machine, like the 'rocker,' was cheap and wasteful; and both were soon displaced by the sluice.

LONGUEUIL, *lŏn-gël:* Canada, town, in Chambly county, in the province of Quebec; on the St. Lawrence river, and on the Canadian Pacific railroad. It is situated opposite Hochelaga, the northeastern part of Montreal. Longueuil is a residential suburb of Montreal, the country around contains many summer homes of city residents. It has St. Anthony's orphanage and an academy for girls and one for boys. Pop. (1901) 2,835.

LONGUEVILLE, *lŏng-vēl,* Anne Geneviève de Bourbon Condé, Duchess of: French beauty and politician: b. Vincennes 1619, Aug. 29; d. Paris 1679, April 15. Her father, Henry II., prince of Condé, was prisoner in the chateau of Vincennes at the time of her birth. Her brothers were the great Condé and the Prince of Conti. The Prince de Joinville, to whom she had been betrothed, having died, she married in 1642 the Duke de Longueville, a widower double her age. Imbibing a fondness for politics, she displayed it most actively in the part which she took in the Fronde. In order to punish the duchess, her brothers and husband were arrested by order of Anne of Austria, the regent, in 1650; but she persisted in her resistance to the court, and repaired to the citadel of Stenay in Flanders, of which she took the command, and was able to induce Turenne to join the Fronde. After the peace of 1659 she devoted herself to a religious life and her influence in Rome was said to have secured for the Jansenists the so-called peace of Clement IX. (1668). The later part of her life was spent in the Carmelite convent of Paris in most stringent observance of religious duties. Cousin, in his *Madame de Longueville* (6th ed., 1859), calls her 'the soul of the Fronde.'

LONGUS, *lŏng'gŭs:* Greek writer; supposed to have lived about the close of the 4th or the beginning of the 5th century A.D. Concerning his history nothing is known. He was the author of a pastoral romance entitled *The Pastorals of Daphnis and Chloé,* of which the best editions are those of Villoison (1778); Courier (1810), Passow (1811). Longus is the latest of the bucolic poets and in the Renaissance period was widely read, his pastoral descriptions, as given in Amyot's French translation, having not a little to do with the revival of the pastoral form.

LONG'VIEW: Texas, town, county-seat of Gregg county; on the Texas & P., the Texas, S. V. & N., and the Great N. railroads; about 240 miles northeast of Austin and 120 miles east of Dallas. It is situated in an agricultural section, in which are raised large crops of grain and cotton. The chief manufacturing establishments are foundry, lumber-mills, railroad-shops, cotton-seed-oil mills, and plow-works. The principal offices of the Texas, Sabine Valley & Northwestern railroad are in Longview. The trade is principally in agricultural products, live stock, hides, cottonseed-oil, and lumber. Pop. (1900) 3,591; (1910) 5,155.

LONG'WORTH, NICHOLAS: 1782, Jan. 16—1863, Feb. 10; b. Newark, N. J.; viniculturist. He spent his youth in South Carolina; went to Cincinnati 1803; studied law and practiced successfully 25 years; and then engaged in grape-growing for the purpose of manufacturing wine. For several years he experimented with foreign vines without satisfactory results; but, after cultivating native vines, he acquired wide reputation for his still and sparkling Catawba and Isabella wines. He also experimented with the strawberry, and produced a species bearing his name. Longworth left a large fortune and was liberal to the poor. He published *Buchanan's Treatise on the Grape, with an Appendix on Strawberry Culture* (Cincinnati 1856).

LOO, n. *lô* [F. *lot,* a lot, a prize]: a game at cards, having varying laws: V. to beat at the game of loo. LOO'ING, imp. LOOED, pp. *lôd.* LOO-TABLE, a round table for a sitting room—so called from being conveniently adapted for a circle of persons playing at the game of loo. *Note.*—Loo is said to be a mere abbreviation of *lanterloo*—from F. *lanturelu,* nonsense! fiddlestick! part of the refrain of a famous vaudeville in France, 1642; as slang it was early used to give an evasive answer.

LOOBY, n. *lô'bĭ* [Icel. *lubbaz,* to loiter about; *lubbi,* a dog having a shaggy coat and hanging ears, a lazy servant: W. *llabi,* a long lubberly fellow (see LOB)]: a dull, lumpish, lazy fellow; an awkward, clumsy person. LOOBILY, a. *lô'bĭ-lĭ,* awkward; clumsy: AD. in an awkward, clumsy manner.

LOO-CHOO, or LIU-TCHIU, *lô-chô':* native name of a

group of about 80 islands called by the Chinese Liéu-kiéu, and by the Japanese Riu-kiu; in the Pacific ocean, about 400 m. off the coast of China, lat. 24°-29° n., long. 127°-129° e. The largest and most southern, called Great Lu-tchu, or Okinawu, is about 65 m. long and 13 broad. Its shores are beautiful; fields and forests are clothed with green, pine-woods crown the summits of the hills, and gardens and cornfields adorn their slopes. In loveliness and variety of landscape, as in the careful attention given to agriculture, especially in the s. part of Great Lu-tchu, which looks like one vast enchanting garden, few places surpass these islands. The principal products of the group are rice, millet, sugar, cotton, tobacco, indigo, and tea; of less importance, bananas, pine-apples, oranges, peaches, and plums. Domestic animals are very numerous—ducks, geese, swine, goats, cattle, and horses. The chief minerals are iron, coal, and sulphur, probably also copper and tin. Sugar, and a liquor called *saki,* distilled from rice, are exported to Japan. The manufacturing industry of the inhabitants is as great as the agricultural. They make paper, cloths, coarse linens, earthen and lackered wares, bricks, tobacco-pipes, and baskets.

The people are partly Japanese and partly an aboriginal tribe closely allied to the Japanese stock; their language is an independent dialect of Japanese, though both Chinese and Japanese are used for literary purposes. Their religion is chiefly a mixture of the doctrines and practices of Confucius with those of Buddha. The government, as in China, is mainly in the hands of an aristocracy of learned men. The islands, which till lately were claimed as tributary both by China and Japan, were formally annexed by the latter power 1879. China protested, and for a time war seemed inevitable. The area of the islands is given at a little over 800 sq.m.; pop. about 167,000.

LOOF, n. *lôf* [see LUFF]: after-part of a ship's bow; the guns mounted in this portion of the vessel are called *loof-pieces;* the windward side of a ship. ALOOF, on loof, that is, out of reach.

LOOF, n. *lôf* [Gael. *làmh,* the hand: Icel. *lófi,* palm of hand]: in *Scot.,* the hand; the palm of the hand.

LOOK, v. *lûk* [Bav. *luegen,* to look: Swiss, *lugen,* to look; *lugen,* eyes: W. *lluch,* a glance: OF. *louquer,* to look askance]: to direct the eye to or from anything; to consider; to apply the mind or understanding; to examine; to have any particular appearance; to have any air or manner; to face or front—usually followed by *on, at, for, after, towards;* to search for: N. the act of looking; the air of the face; sight; glance; appearance; view: INT. see; behold. LOOK'ING, imp.: ADJ. having appearance, as in *good-looking:* N. expectation, followed by *for.* LOOKED, pp. *lûkt.* LOOK'ER, n. *-ėr,* one who

looks; a spectator. To LOOK ALIVE, in *familiar slang*, an expression urging to greater speed or activity. To LOOK ABOUT ONE, to be vigilant. To LOOK AFTER, to attend to or take care of. To LOOK BLACK, to frown; to shown signs of strong dislike. To LOOK BLANK, to have a stupid, bewildered appearance, arising from the sudden and unexpected announcement of something of an unpleasant nature. To LOOK DOWN ON or UPON, to treat with indifference or contempt. To LOOK FOR, to expect; to search. To LOOK IN THE FACE, to face or meet with boldness. To LOOK INTO, to inspect closely; to examine. To LOOK ON or UPON, to respect or esteem; to regard as good or bad; to consider; to view; to be a mere idle spectator. To LOOK OUT, to be on the watch; to search for and discover; to choose To LOOK OVER, to examine one by one; to refrain from censure or punishment, as for a fault. To LOOK TO or UNTO, to watch; to take care of. To LOOK UP, to search for and find; to show a tendency to rise or improve, as prices are *looking up*. To LOOK UP TO, to respect. LOOKING FOR, expectation. LOOKING-GLASS (see MIRROR). LOOK-OUT, a small watch-tower, or an elevation, on the roof of a building; a view; a prospect; watch.

LOOK-OUT MOUNTAIN, BATTLE OF. See CHATTANOOGA, BATTLE OF.

LOOL, n. *lôl:* a vessel used to receive the washings of ores in mining districts.

LOOM, n. *lôm* [AS. *geloma,* or *loma,* utensils, household stuff: Gael. *làmh,* a hand or handle]: *literally,* a utensil, or a tool; a simple machine in which cloth is woven—the one set of threads running lengthwise in the material being called the *warp,* and the other set running across being called the *woof* or *weft;* the part of an oar lying within the boat when rowing. HAND-LOOM, a loom driven by the hand. HEIR-LOOM (see HEIR). POWER-LOOM, a loom driven by steam. JACQUARD-LOOM, *jăk-kârd'-,* or *zhă-kârd'-,* a machine invented by *M. Jacquard* of Lyons for weaving figured goods.

LOOM, v. *lôm* [Icel. *ljóma,* to gleam, to shine: It. *lume,* light: AS. *leoma,* a ray of light, a beam]: to be seen imperfectly, as a ship on the horizon, or seen through a mist; to appear indistinctly above the surface either of sea or land; to appear larger than the real size, and indistinctly; to appear to the mind's eye faintly or obscurely, or, as it were, in the distance. LOOM'ING, imp.: N. the indistinct appearance of a distant object, as in a mist, or particular state of the atmosphere. LOOMED, pp. *lômd.*

LOOM: machine by which weaving is effected. The art of weaving is coeval with civilization, therefore the loom may be reckoned among the earliest of man's inventions; yet, notwithstanding its vast age, very little improvement was effected in it until the invention of Dr.

Cartwright 1787, who, without ever having seen a loom, constructed one to work by machine-power. In its simplest form, the loom worked by hand; and notwithstanding the wonderful improvements which have been effected in the power-loom since its invention, many fabrics still are manufactured by hand-looms.

In India, probably the native country of the loom, and where silks of almost unrivalled beauty are made, the natives continue to use this machine in its most primi-

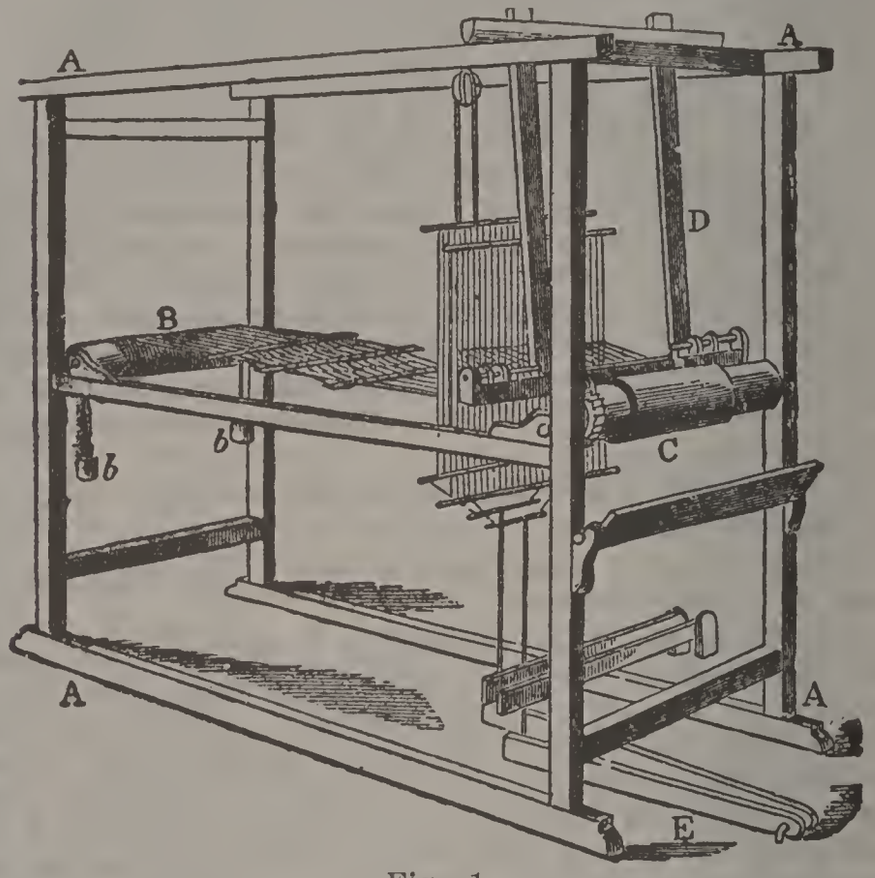


Fig. 1.

tive form; two trees growing near together form their standing frame, and a few pieces of bamboo, together with some pieces of string, furnish all they want besides.

The principle of weaving shows the work that the loom has to do. In its simplest sense, weaving consists in passing one set of threads transversely through another set, divided into two series, working alternately up and down, so as to receive the transverse threads in passing, and interlock them, forming thereby a united surface out of the threads. The loom is made to assist the weaver in this operation in the manner shown in fig. 1: AAAA is the frame, and is of no other use than to hold the working-parts in their proper position. The native of India supplies this usually by selecting two near-growing tree-stems, usually palms, because of their straightness: these, with four stakes to support his warp, and two or three pegs to fix his heald-ropes, complete his arrangements.

At each end of the frame, two rollers are placed, B, C, so that they will readily turn on their axes; and from one to the other, the threads of the warp are attached, and kept tight by the weights *b*, *b*. The warp-threads are wound round the roller B, which is called the *beam*

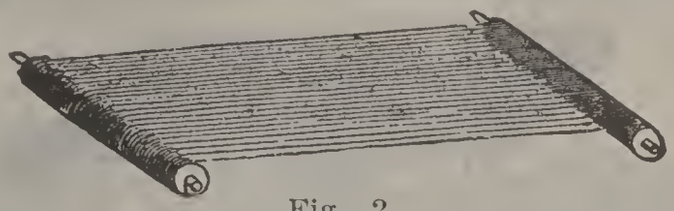


Fig. 2.

or *yarn-roll*, only as much of each thread being left unwound as will reach to the other roller, C, which is the *cloth-beam*, to which the ends are fastened, and upon which the cloth is wound as it is woven. The warp so stretched is seen in fig. 2.

The next step is to divide the warp-thread into two equal sets by raising up every alternate one, and inserting between them a smooth rod of wood, to prevent them entangling or returning to their former position. This separation takes place before the final fixing of the ends of the threads to the *cloth-beam*, because, previous to that, each thread must be passed through a small loop in a perpendicular thread called the heald, which hangs down from the rod A in fig. 3 (in which only six heald-threads and six warp-threads are shown, for the sake of rendering the action clearer). There are always two sets of healds in the simplest form of loom, often many more; and in the case of plain weaving the threads of the warp are divided alternately by the loops of each heald, so that if one heald is raised, it lifts every alternate thread of the warp, and if the other

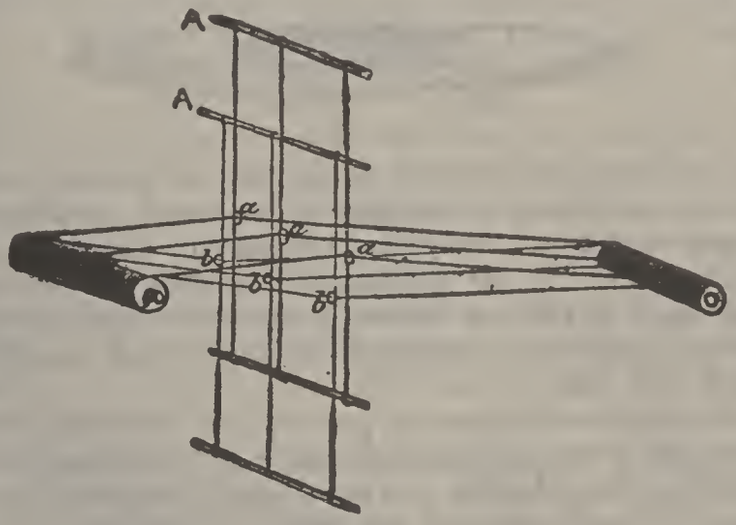


Fig. 3.

is depressed, it pulls down the opposite set of threads; thus, in fig. 3, the three threads of the warp are seen to pass through the three upraised threads of one heald by the loops *a*, *a*, *a*, and the three remaining threads of the warp pass through the depressed healds by their loops

b, b, b; the united action of the two healds opens a space between the two sets of warp-threads similar to that shown in fig. 4. This space is called the shed, and through it is thrown the shuttle which carries the thread of the weft; when the weft has passed through the healds

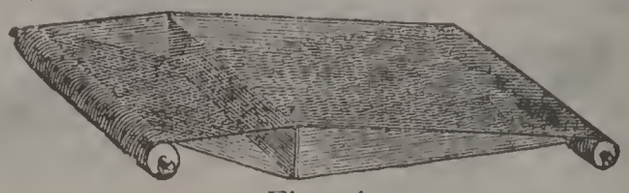


Fig. 4.

are reversed, and the lower warp-threads now become the upper ones. The threads, after each intersection, are driven up tight by the reed, which is a narrow frame with transverse wires set sufficiently far apart for a single thread of warp to pass through each; it hangs to the frame called the batten, fig. 1, D. The movement of the batten is produced by the hand of the weaver, while that of the healds is readily effected by the treadles E.

Many improvements have been made in this the simplest form of loom, but the chief has been in replacing the weaver's hand in the necessary operation of throwing the shuttle by a mechanical arrangement. Without this the *power-loom* would not have succeeded. The shuttle (fig. 5) is usually made of box or some other hard-wood; and the blunt points are covered with iron. Formerly, when used entirely by the hand, it was made much lighter and smaller than at present. Those now in use are about 12 inches in length, and rather more than an inch square in the middle. The middle part is hollowed into a small box, open on the upper side. In this box the bobbin, on

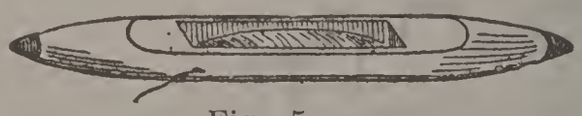


Fig. 5.

which the yarn or thread is wound, is placed, with its two ends on pivots, admitting of its being turned by the slightest strain on the yarn; the end of the yarn passes through a hole in the side of the shuttle, as seen in fig. 5; and as it is thrown forward and backward, the thread unwinds from the inclosed bobbin, and easily runs through the hole.

In the improved looms for power, and even in those still worked by hand, in special cases the arrangement for projecting the shuttle forward and backward is very simple. On each side of the loom, exactly in a line with the *shed,* is a groove of about 18 inches, in which the shuttle lies free; and there is a very simple arrangement by which a piece of leather and a strap are made to act like a sling on each side; and the grooves or *shuttle-races,* as they are called, guide the movement with such precision that the shuttle is sent flying through the shed

from side to side with unerring exactness. This arrangement is shown in fig. 6. The simplicity and compactness now attained in the power-loom allow three to stand in the space occupied by one of the cumbrous machines formerly in use.

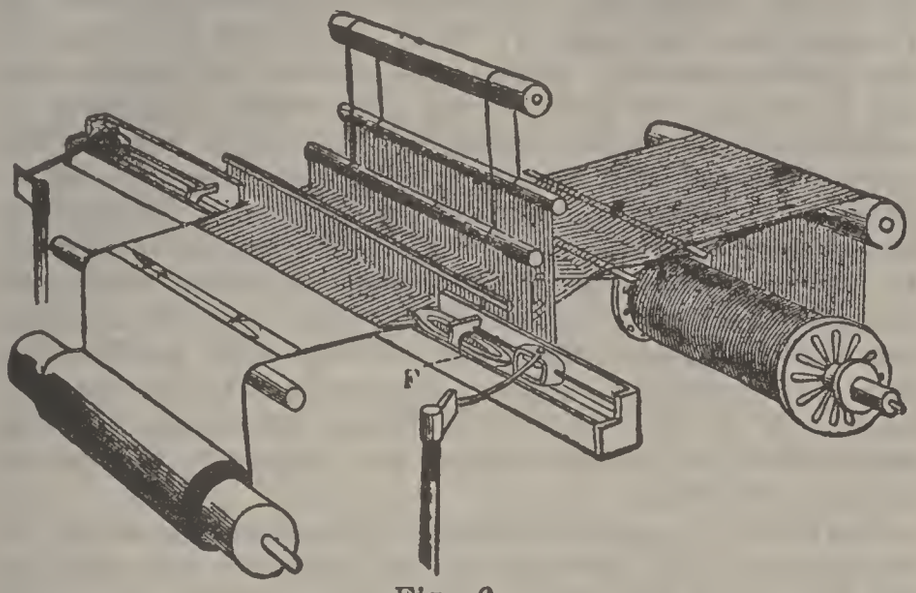


Fig. 6.

The hand loom is still used for the manufacture of rugs and fine carpets, but the power loom, driven by various powers, electricity being the latest and in some ways the most economical, is used for almost any purpose. The ribbon-loom, for instance, weaves simultaneously a number of narrow pieces. Many attachments, invented in a long series, have continuously and wonderfully decreased the need of any supervision of the loom, making it more and more automatic: thus a shuttle protector automatically stops the machinery if the shuttle fails to fly all the way across the warp; the filling stop motion protects the machinery from running on uselessly when the filling breaks or runs out; and take-up, let-off, and warp-stop motions are further automatic devices. The highest pitch of automatic attachment is the Northrop patent, which is a hopper full of loaded bobbins; these are fed into the place of the empty bobbins as soon as the yarn is exhausted.

See Posselt, *Textile Machinery* (1901) and *Jacquard Machine Analyzed and Explained* (1893); and Barlow, *History and Principles of Weaving by Hand and by Power* (1879).

LOO'MIS, *lô'mĭs*, ALFRED LEBBEUS: American physician: b. Bennington, Vt., in 1833; d. 1895, Jan. 23. He was graduated at Union College in 1851, and studied medicine in New York city at the College of Physicians and Surgeons, where he was graduated in 1852. He gave his attention to diseases of the lungs at a time when auscultation and percussion were acquiring great scientific importance in medical practice, and in the treatment of such diseases became an efficient specialist. In 1859

he was appointed visiting physician to Bellevue Hospital, New York, and was made lecturer on physical diagnosis at the College of Physicians and Surgeons in 1862. Having spent some months in the Adirondack mountains for the improvement of his health, in later years he established the Sanitarium at Saranac and the Hospital for Consumptives at Liberty, N. Y. In 1866 he accepted the professorship of theory and practice of medicine at the University of the City of New York, remaining in connection with that institution until his death. The work done by him for its medical department was of great and lasting importance, as were also the services he rendered to the New York Academy of Medicine. In 1874 he was appointed visiting physician to Mount Sinai Hospital; was president of the New York Academy of Medicine, 1899-90 and 1891-2. His publications include *Lessons in Physical Diagnosis* (1870); *Lectures on Fevers* (1877); and *A Text-book of Practical Medicine* (1884). He also edited *An American System of Medicine* (1894).

LOOMIS, Charles Battell: American humorist: b. Brooklyn, N. Y., 1861, Sept. 16. He was educated at the Brooklyn Polytechnic Institute and held a business clerkship 1879-91. He is a frequent contributor to periodicals and has published *Just Rhymes* (1899); *The Four-Masted Cat-boat* (1899); *Yankee Enchantments* (1900); *A Partnership in Magic* (1903); *Cheerful Americans* (1903); *More Cheerful Americans* (1904); *I've Been Thinking* (1905); *Minerva's Manœuvres* (1905); *Cheer Up* (1906); *A Bath in an English Tub* (1907; etc.

LOOMIS, Chester: American painter: b. near Syracuse, N. Y., 1852, Oct. 18. He was educated at Cornell University (1868-71); studied painting at Paris under Léon Bonnat, and after a residence of 11 years in France opened a studio at Englewood, N. J. He is favorably known as a figure and landscape painter and his pictures are found in many private collections. His *Christopher Sly* was awarded a gold medal at the Massachusetts Charitable and Mechanics' Institution Exhibition and was subsequently purchased by the Indianapolis Art Association.

LOOMIS, Elias, ll.d.: 1811, Aug. 7—1889, Aug. 15; b. Willington, Conn.: educator. He graduated at Yale 1830; was tutor in science there 1833-36, during which time he began observing the altitude of shooting stars and the declination of the magnetic needle, and discovered the return of Halley's comet; studied in Paris 1836-37; and was professor of mathematics and natural philosophy in Western Reserve College 1837-44. During 1844-60 he was professor of natural philosophy in the Univ. of the City of New York, and prepared most of his well-known mathematical and astronomical text-books. In 1860 he became Munson professor of natural philoso-

phy and astronomy in Yale College, where he remained till his death. He received the degree LL.D. from the Univ. of the City of New York 1854, and bequeathed his books and pamphlets relating to mathematical and physical sciences, and the bulk of his estate, estimated at $300,000, to Yale College to aid original research in its observatory. His publications include *Plane and Spherical Trigonometry* (1848); *Progress of Astronomy* (1850-56); *Analytical Geomctry and Calculus and Elements of Algebra* (1851); *Elements of Geometry and Conic Section* (1851-71); *Tables of Logarithms* (1855); *Natural Philosophy* (1858); *Practical Astronomy* (1855-65); *Elemcnts of Arithmetic* (1863); *Treatise on Meteorology* (1868); *and Elements of Astronomy* (1869).

LOOMIS, FRANCIS B.: journalist, diplomat, and first assistant secretary of state: b. Marietta, O., 1861, July 27. He graduated from Marietta College in 1883, and became a journalist; from 1885-87 was state librarian, Ohio; 1887-90, Washington correspondent; 1890-93, consul at St. Etienne, France, contributing interesting reports on the European labor situation; 1893-96 was editor-in-chief Cincinnati *Daily Tribune*, and in 1897 was appointed minister to Venezuela. He actively contributed to the development of U. S. commerce in South America, in connection therewith taking a long voyage up the Orinoco river in the U. S. warship *Wilmington* in 1898. During his tenure of office diplomatic complications arose with the Venezuelan government over its interference with U. S. commercial interests, especially in connection with asphalt claims, and Loomis's attitude was responsible for the pressure brought to bear by the government of the U. S. From 1901-03 he was minister to Portugal, and in the latter year was appointed first assistant secretary of state. He came into prominence after Panama declared its independence of Colombia 1903, Nov. 4, by eulogizing the policy of President Roosevelt in the matter, his speech and actions receiving considerable criticism. He had been succeeded in Venezuela by H. W. Bowen (q.v.), who brought to official notice reports current in Venezuela, accusing Loomis of receiving bribes and official corruption, but after an official investigation Loomis was exonerated in June, 1905, of the charges, and Bowen was removed from his office. Loomis was subjected to virulent newspaper attacks, but retained the confidence and protection of his administration chiefs, and was appointed special ambassador to conduct the ceremonies in France attending the transfer of the remains of John Paul Jones to the U. S., at the same time being entrusted with the mission of making a study of the methods of doing business in the foreign office of the great European powers, with a view of improving those used by the government of the U. S. On his return he resigned his official position, and was succeeded Sept. 4 by Robert Bacon.

LOOMIS, Gustavus: American soldier: b. Thetford, Vt., 1789; d. 1872. He was graduated at West Point and received his commission as sub-lieutenant of artillery in 1811. He saw service on the Niagara frontier from 1812 to 1813, in which latter year he took part in the capture of Fort George (May 27) and was made prisoner the following December at Fort Niagara. During the war with Great Britain, the Black Hawk war, and the campaign against the Seminole Indians, he held important commands, and after the civil war, in which he served as superintendent of the general recruiting service, was retired with rank as colonel of infantry. In 1865 he received the brevet of brigadier-general of the United States army.

LOOMIS, Lafayette Charles, A.M., M.D.: American author and educator: b. North Coventry, Conn., 1824, July 7. He was graduated from Wesleyan University, Conn., in 1844, and was successively president of colleges at Wilmington, Del., and Wheeling, W. Va., and later medical professor at Howard University, Washington, D. C. He published *Mizpah* (1859); *Mental and Social Culture* (1868); *Index Guide to Travel and Art Culture in Europe* (1880); *Myself* (1894).

LOOMIS, Silas Lawrence: American scientist and inventor: b. Coventry, Conn., 1822. He was graduated from Wesleyan University in 1844, from the medical school of Georgetown University in 1856, and was professor of physiology at Georgetown in 1859-60. In 1857 he was appointed astronomer to the United States coast survey; in 1860 instructor in mathematics to naval cadets; in 1861-7 was professor of chemistry and toxicology at Georgetown, and subsequently occupied a chair at Harvard. Among his inventions are a process for manufacturing a textile fabric from the palmetto, and another for making profitable use of chromium ores. He wrote text-books of arithmetic, a *Key to the Normal Course* (1867), and other works.

LOON, n. *lôn* [OE. *loom;* Icel. *lómr*]: arctic swimming and diving bird, allied to the *grebe*, but with fully webbed toes; the great northern diver. See Diver.

LOON, Loun, and Lown, n. *lôn* [Dut. *loen*, a stupid, silly man: O. Dut. *lome*, slow]: a lazy, good-for-nothing fellow; a sorry fellow.

LOON, *lō-ōn':* Philippines, a pueblo of the province of Bohol, situated on the west coast, 13 miles north of Tagbiliran, and opposite Dalaguete, Cebu. A mole 328 yards long, protecting the harbor, extends to the town, which is reached by steps cut in the rock. It is picturesquely situated on the slope of the Cammanoc hills, and has an old Spanish fort with bastions. It is centrally located for trade, and is the largest town in the province. Pop. 15,400.

LOOP, n. *lôp* [Gael. *lùb,* a bend, a loop; *lubach* crooked]: a folding or doubling of one part of a string or cord through which another part may be run for fastening; an ornamental doubling in fringes; a noose; V. to form with loops; to fasten the loops of. LOOP'-ING, imp. LOOPED, pp. *lôpt:* ADJ. having loops. LOOP-ERS, n. plu. *lôp'ėrz,* the caterpillars of certain moths which double up into a loop while creeping. LOOP-LINE, a connecting line in a railway, having each end joined to the main line.

LOOPHOLE, n. *lôp'hōl* [Lang. *loup,* a small window in a roof: Dut. *luipen,* to peep, to lurk]: peep-hole or narrow opening in the wall of a castle whence to shoot in safety at the enemy; a small hole in the bulkhead of a ship; a secret means of escape; a hole into or through which one may slip; figuratively, evasion or shift. LOOP-HOLED, full of holes or openings.—The loophole should widen toward the outside, that the shooter may have a sweep with his rifle; and it is of importance, on that account, so to fashion the sides that a bullet may not penetrate, unless fired straight into the centre. For this purpose the stones are usually laid stepwise, although other forms are frequently resorted to.

LOOPING, n. *lôp'ĭng* [Dut. *loopen,* to run]: the running together, or semi-fusion, of pieces of ore, when heated for calcination only.

LOOS, n. *lôs* [F. *los,* praise—from L. *laus,* praise]: in *OE.,* praise.

LOOS, *lōs,* CHARLES LOUIS, A.M., LL.D.: American educator: b. Woerth-sur-Sauer, Basse-Alsace, France, 1823, Dec. 23. He came to the United States in 1832, and settled at New Franklin, Ohio, where he studied English, became connected with the Disciples of Christ in 1858 and preached at 17. He was graduated from Bethany College in 1846, where he was professor of ancient languages 1858-80. He was president of Kentucky University 1880-97. In 1849 he was ordained to the ministry of the Disciples and has been of great prominence in his denomination.

LOOSE, a. *lôs* [Dut. *los;* O. Dut. *loos,* loose: Icel. *lauss,* loose, vacant: Goth. *laus,* empty]: unbound; not fastened or confined; slack; not tight or close; not dense; not precise or exact; vague; rambling; lax, as the bowels; not concise; not accurate; at liberty; wanton; inattentive: V. to unite or unbind; to release or set at liberty; to let go; to remit or absolve; to set sail. LOOS'-ING, imp. LOOSED, pp. *lôst.* LOOSE'LY, ad. *-lĭ,* not firmly; without connection; negligently; irregularly; wantonly, dissolutely. LOOSE'NESS, n. *-nĕs,* the state of being loose; slackness; the opposite of tightness or rigidness; laxity; irregularity; habitual lewdness; diarrhea. LOOSE-BOX, a compartment for horses; a stall where they are not tied. LOOSE CASH, small change of

which no strict reckoning is kept. To BREAK LOOSE, to escape from confinement or restraint. To LET LOOSE, to set at liberty. To PLAY FAST AND LOOSE, to be so uncertain as to do, now one thing, now another and opposite one; to prevaricate.—SYN. of 'loose, a.': untied; vague; indeterminate; inaccurate; unconnected; slack; disengaged; free; remiss; dissolute; irregular; unchaste.

LOOSEN, v. *lôs'n* [from LOOSE, which see: Dut. *lossen;* Ger. *lösen;* Icel. *leysa,* to loosen]: to free from tightness; to render less tight or compact; to relax; to become loose. LOOSENING, imp, *lôs'n-ĭng.* LOOSENED, pp. *lôs'nd,* freed from tightness or closeness; rendered loose.

LOOSE'STRIFE: a plant of the genus *Lysimachia,* of the primrose family, about 40 species of which grow in the temperate zone. Several yellow-flowered species belong to the United States, but those best known are the whorled or four-leaved (*L. quadrifolia*), and the bulb-bearing *L. terrestris.* Two or three species, especially *L. nummularia,* popularly known as moneywort, creeping Charley and creeping Jenny, have been introduced from Europe. One kind is eaten in India as a pot-herb with fish.

The name loosestrife is also given to species of the genus *Lythrum,* which some botanists place in the order *Primulaceæ,* of which about a dozen species are widely distributed in temperate climates. They are characterized by four-angled stems, usually opposite leaves which are sometimes whorled, and reddish-purple or white flowers, solitary above and whorled lower down the stems. Some are cultivated for ornament in borders and among shrubbery, where they succeed well. The best-known species is the purple loosestrife (*L. silicaria*), which is frequently planted.

LOOT, n. *lôt* [Hind. *lût,* plunder]: in *E. I.,* theft or plunder; plunder taken in war: V. to carry off as plunder; to ransack houses for plunder. LOOT'ING, imp. LOOT'ED, pp.

LOP, v. *lŏp* [It. *lappare,* to lop trees: Low Ger. *lubben;* O. Dut. *luppen,* to maim, to geld: Ger. *laub,* foliage]: to cut off, as branches from a tree; to cut off the top or extreme part; to prune: N. in *OE.,* a branch or part cut from a tree. LOP'PING, imp.: N. the act of cutting off; that which is cut off. LOPPED, pp. *lŏpt.*

LOP, a. *lŏp* [Fin. *loppa,* anything hanging or dangling: Icel. *lapa,* to hang loose]: dependent; hanging down. LOP-EARED, having hanging ears. LOP-SIDED, heavier on one side than on the other, as a ship; sloping at the sides.

LO'PE DE VE'GA: See VEGA-CARPIO.

LOPES, *lō'pāsh,* CAETANO: Brazilian historian: b. Bahia 1780, October; d. Paris 1860, December 22. He was a mulatto and after obtaining an education in Bahia and Paris, France, settled in the latter place in 1822

and became corresponding member of the Academy of Inscriptions and Belles-lettres. The Emperor Pedro held him in high esteem and the Historical Institute of Rio Janeiro bestowed him its gold medal. He was conspicuous for brightness of style and purity of language. His works, which are numerous, treat of history, biography, and surgery.

LOPES, or LOPEZ, FERNAO: Portuguese chronicler: b. about 1380; d. after 1459. He was appointed chief archivist of the kingdom by Dom Joan I. in 1434, and spent his life in historical research and the composition of chronicles, which for literary and critical value were unsurpassed in his century. His *Chronicle of Señor Don John I.*, describing the great struggles between Portugal and Castile, invites comparison with Froissart's chronicle on account of its picturesqueness and dramatic reality. Equally vigorous are his chronicles of Dom Pedro I. and Don Fernando.

LOPEZ, *lō'pāz* or *lō'pāth*, CARLOS ANTONIO: president of Paraguay: b. near Asuncion about 1795; d. there 1862, Sept. 19. He was educated in Asuncion and became noted for his legal acquirements. After the death of President Francia, in 1840, he was secretary of the junta which controlled Paraguay for a few years. In March, 1844, the Paraguay congress adopted the constitution he had drawn up and elected him president of Paraguay for ten years. He was re-elected for three years in 1851; and again in 1857 for seven. He followed Francia's policy in the main and became involved in quarrels with foreign nations. In 1859 the United States sent a naval force to the Plata to enforce demands against him. He offered to submit the question of damages to arbitration, but afterward evaded the claim.

LOPEZ, FRANCISCO SOLANO: Paraguayan president: b. Asuncion 1827, July 24; d. near the Aquidaban 1870, March 1. He was the son of Carlos Antonio Lopez (q.v.), then president. In his 18th year his father made him a brigadier-general in the war against Rosas, the dictator of Buenos Ayres. He afterward filled some of the principal offices of state, and was sent to Europe in 1853, accredited to the chief courts there. In 1855 he returned to Paraguay, became minister of war, and on the death of his father, in 1862, president for ten years. He had aimed at the foundation of a great inland empire, and as his military preparations were now complete, and his army superior to that of any of the South American states, he began hostilities against Brazil in 1864. The Argentine Republic and Uruguay allied themselves with Brazil, and after five years' conflict Lopez was reduced to extremities, and was finally surprised on the banks of the Aquidaban by a troop of Brazilian cavalry and slain. The latter part of his career had been stained by many cruelties and wanton murders. Consult: Thomp-

son, *The War in Paraguay* (1869); Masterman, *Seven Eventful Years in Paraguay* (1869); Burton, *Letters from the Battle Fields of Paraguay* (1871); Washburn, *History of Paraguay* (1871); Schneider, *Der Krieg der Triple-Allianz* (1872-5).

LOPEZ, José Hilario: Colombian politician; b. Popayan 1798, Feb. 18; d. Neiva 1869, Nov. 27. He was president of New Granada (Colombia) from March 7, 1849, to March 7, 1852, and in the last named year slavery was abolished and changes were made looking to the formation of a federal government. In the revolutions of 1854 and 1859-62, he fought with the federalists and was commander-in-chief for part of this period. He was a member of the provisional government 1862-3, and subsequently president of Tolima. In 1867 he was named commander-in-chief of the army.

LOPEZ, Narciso: Cuban revolutionist: b. Venezuela 1799; d. Havana, Cuba, 1851, Sept. 1. He served for some time in the Spanish army, from which he retired in 1822 with the rank of colonel. After the evacuation of Venezuela by the Spanish troops, he established himself in Cuba, and afterward during a stay at Madrid joined the party of Isabella against Don Carlos, and became successively adjutant of Valdes, governor of the Spanish capital, and senator for Seville, but threw up his offices after the refusal of the Cortes to admit the representatives of Cuba. Valdes became governor-general of that island, and Lopez on returning thither was employed by him in various capacities. He was soon absorbed by the project of throwing off the yoke of Spain, and he proceeded in 1849 to the United States, where he sunk almost his whole fortune in the organization of three successive expeditions to Cuba: the so-called Round island expedition in 1849; the 'invasion of Cardenas' expedition in May, 1850, both of which failed, and the Bahia-Honda expedition, of August, 1851, which ended fatally. Lopez, with several hundred persons of different nationalities, whom he had enlisted in various parts of the United States, landed at Morillo, near Havana, where he left 200 of his men under the command of Colonel Crittenden, who were taken by the Spaniards and shot. Lopez went to Las Pozas, where he succeeded in repelling an attack of the Spanish soldiers; but, isolated from his friends, sought refuge in the mountains, where he was captured and taken to Havana. He was sentenced to death, which he met with great firmness.

LOPEZ, Vicente Fidel: Argentine historian: b. Buenos Ayres 1814. He is a son of Vicente Lopez y Planes (q.v.). He became rector of the University of Buenos Ayres and has published *Razas del Perú anteriores a la Conquista; Historia de la Republica Argentina; Tratado de Derecho Romano;* etc.

LOPEZ DE AYALA, Pedro: Spanish dramatist: b.

Seville district 1827, May 1; d. Madrid 1879, Jan. 30. He was educated at the University of Seville, and at Madrid in 1851 had his first drama, *El Hombre de Estado,* produced. In 1857 he was elected deputy from Badajoz to the cortes, and subsequently he was a member of Alfonso XII.'s first cabinet. He was the author of numerous lyrics which take excellent rank in Spanish literature, especially of the *Epistola.* But he was better known as a dramatist of high literary and popular success. Chief of his plays are *Tanto por Ciento* (So Much per Cent.), which was recognized by the bestowal upon him of a gold crown, and *Consuelo.* Both are searching arraignments of the principles of modern life.

LOPEZ DE AYALA, PEDRO: Spanish poet: b. Murcia 1332; d. Calahorra 1407. He served well Henry II., John I., and Henry III., kings of Castile, attained the highest dignities, including those of lord chancellor and high chamberlain of Castile, and wrote the *Cronicas de los Reyes de Castilla* (*Chronicles of the Kings of Castile*) (1780), which covers the period from King Peter to Henry III. In this work he strove to substitute for the dry record of the historiographers a pragmatic account of historical events. He also wrote lyrics, and the *Rimado de Palacio* (*Rime of the Palace*), a satiric poem on political and social questions.

LOPEZ Y PLANES, VICENTE: Argentine poet: b. Buenos Ayres 1784; d. there 1856. He was prominent as a soldier and politician, was member of congress 1819-25, and provisional president of the republic July 5 to Aug. 13, 1827. He presided over the supreme court of justice, and was governor of the province of Buenos Ayres. He was the author of the *Argentine National Hymn,* and other poems.

LOPHI'ADÆ. See ANGLER.

LOPHIODON, n. *lō-fī'ō-dŏn* [Gr. *lophos,* a ridge, a crest; *odous* or *odonta,* a tooth]: in *geol.,* extinct tapir-like pachyderm of the Tertiary epoch, having crested teeth. Its remains are found in central Europe, in the Eocene Tertiary formation. These mammals were of the family *Tapiridæ,* and were of very various size. See PTERODACTYLA; TAPIR; UNGULATA.

LOPHIOSTOMATE, a. *lŏf'ĭ-ŏs'tŏ-māt* [Gr. *lophos,* a ridge, a crest; *stoma,* a mouth]: in *bot.,* having crested apertures or openings. LOPHOPHORE, n. *lŏf'ō-fōr* [Gr. *phorĕō,* I carry]: in *zool.,* the disk or stage upon which the tentacles of the Polyzoa are placed.

LOPHOBRANCHIATE, a. *lŏf'ō-brăng'kĭ-āt* [Gr. *lophos,* a ridge, a crest; *brangkĭă,* gills]: having gills arranged in tufts, applied to an order of fishes, including the pipe-fish and sea-horse. LOPHOBRAN'CHII, order of osseous fishes, having the ultimate divisions of the gills not pectinated, but arranged in small tufts in pairs along the branchial arches. There is nothing like this in any other

fishes. The fishes of this order are few, mostly of small size, angular form, and peculiar aspect. See HIPPOCAMPUS and PIPE-FISH. The gill-cover is large, and the gill-opening is a small hole. The snout is elongated and tubular.

LOPHYROPODA, n. plu. *lŏf'ĭ-rŏp'ŏ-dă* [Gr. *lophos*, a crest or tuft of hair; *oura*, a tail; *podēs*, feet]: a section of the Crustacea, embracing those which have cylindrical or conical ciliated or tufted feet.

LOQUACIOUS, a. *lō-kwā'shŭs* [L. *loquax* or *loquācem*, full of words, talkative: It. and F. *loquace*]: given to much talking; garrulous. LOQUA'CIOUSNESS, n. *-shŭs-nĕs*, or LOQUACITY, n. *lō-kwăs'ĭ-tĭ* [F. *loquacité*]: the habit of excessive talking; garrulity. LOQUA'CIOUSLY, ad. *-lĭ*.

LOQUAT, *lō'kwăt* (*Eriobotrya Japonica*): esteemed Chinese and Japanese fruit, of nat. ord. *Rosaceæ*, subord. *Roseæ*, and of a genus closely allied to *Mespilus* (Medlar). It has been introduced into Australia, and is now abundant there, and is sold in large quantities, and at a cheap rate, in the markets of Sydney and other towns. The tree or shrub which produces it attains a height of 20 or 30 ft., but in cultivation is seldom allowed to exceed 12 ft. It is a beautiful evergreen, with large oblong wrinkled leaves, and white flowers in terminal woolly panicles, having a fragrance like that of hawthorn-blossom; the fruit is downy, oval, or pear-shaped, yellow, and about the size of a large gooseberry. The seeds have an agreeable flavor, which they impart to tarts. The loquat lives in the open air in the south of England, and produces an inferior quality of fruit.

LORAIN, *lō-rān'*: Ohio, city, in Lorain county; on the south shore of Lake Erie, at the mouth of the Black river, and on the New York C. & St. L. (Nickel Plate), Baltimore & O., and Lake Erie & Pittsburg railroads; about 26 miles west of Cleveland. The first permanent settlement was made in 1822 by Barney Meeker. It was incorporated as a village in 1873 and as a city in 1895. It is an agricultural and natural-gas region, and is a shipping port for farm products, for the output of the central Ohio coal fields, and for the lumber and iron ore of a large section of the state. The chief industries of the city are ship-building, coal shipping, manufacturing steel, general manufacturing, and fishing. The Lorain Steel Company employ about 4,000 people; the American Shipbuilding Company, 1,300; the Baltimore & Ohio, in shops, at docks, etc., 1,000; small industries, about 2,000. The city has excellent public and parish schools, a public library, 22 churches, and Saint Joseph's Hospital. There are five banks with a combined capital of $300,000. The government is vested in a mayor, a board of public service (three members), and a council of seven members. Four of the council are elected one from each ward, and the other three, at large. The

waterworks are owned and operated by the city. Pop. (1910) 28,883.

LORANTHA'CEÆ. See MISTLETOE.

LORATE, a. *lō'rāt* [L. *lorum,* a thong or strap]: in *bot.* and *zool.,* applied to organs or members having the form of a thong or strap.

LORCA, *lōr'kâ* or *lŏr'kâ* (ancient *Eliocroca*): town of Spain, province of Murcia, 40 m. s.w. of the city of Murcia, on the right bank of the Sangonera; picturesquely situated on an eminence crowned by a fortified castle commanding a magnificent view. Next to Murcia, Lorca is the most flourishing town in the province, possessing substantial houses, numerous churches and monasteries, many oil and flour mills, saltpetre and powder works, lead-mines, and manufactures of cotton, etc. Pop. about 70,000.

LORCHA, n. *lŏr'chă:* a light coasting-vessel used in the Chinese and Eastern seas, having the hull built on a European model, but rigged like a Chinese junk.

LORD, n. *lawrd* [AS. *hlâford;* Icel. *lavardr,* a master, a lord: Scot. *laird,* a landholder, a proprietor]: one who possesses the highest power or authority; a husband; a master; a sovereign; a ruler; a baron in the British peerage; any peer of the realm: for other applications, see LORD below: an anc. name of address, as we now use 'sir, master.' LORD, the Supreme Being: V. to domineer or tyrannize; in *OE.,* to invest with the dignity and privileges of a lord. LORD'ING, imp. LORD'ED, pp. LORD'LY, a. *-lĭ,* or LORD-LIKE, a. becoming a lord; haughty; proud; insolent; arrogant: AD. proudly; imperiously. LORD'LINESS, n. *-lĭ-nĕs,* high station; pride; haughtiness. LORD'LING, n. a little lord; a would-be lord. LORD'SHIP, n. a title of address to a nobleman or high officer; the territory or jurisdiction of a lord; a manor; dominion; authority. MY LORD, YOUR LORDSHIP, forms of expression used in addressing a lord. THE LORD'S DAY, first day of the week, or Sunday; the Christian Sabbath. LORD'S SUPPER, the Holy Communion; the Eucharist. OUR LORD, Jesus Christ; the Saviour (see CHRIST, THE). LORD ADVOCATE, chief law officer of the crown in Scotland (see ADVOCATE). LORD HIGH CHANCELLOR, highest judicial officer of the British crown, presiding judge in the court of chancery, and speaker of the house of lords. LORD JUSTICE-CLERK, second in rank of the two highest judges of the supreme court of Scotland. LORD LIEUTENANT (see LIEUTENANT). LORD JUSTICE-GENERAL, or LORD PRESIDENT, highest in rank of the judges of the supreme court of Scotland. LORD ORDINARY (see COURT OF SESSION). LORD PRIVY SEAL, high officer of state in Britain, and member of the cabinet, keeper of the privy seal, whose issue to the lord chancellor is an authority to him to pass the great seal. LORDS SPIRITUAL, the archbishops and bishops having seats in the house of

lords. LORDS TEMPORAL, the peers of England; 16 representatives of the Scotch, and 28 of the Irish, peerage. LORD OF THE MANOR, owner of a manor having copyhold tenants (see MANOR). HOUSE OF LORDS, one of the constituent parts of the parliament of the United Kingdom, consisting of the Lords Spiritual and Temporal (see PARLIAMENT).—SYN. of 'lordly': overbearing; imperious; tyrannical; despotic; domineering.

LORD [Anglo-Saxon *hlâford*—from *hlâf*, loaf, and, probably, *weard*, keeper, master—i.e., master of the house]: title given in Great Britain to persons noble by birth or by royal creation. Peers of the realm are so styled, including such archbishops or bishops as are members of the house of lords, who are Lords Spiritual. By courtesy, the title Lord is given to the eldest sons of dukes, marquises, and earls, prefixed to an inferior title of the peerage, and to the younger sons of dukes and marquises, prefixed to their Christian name and surname. The following persons bear the title lord in virtue of their employments—the Lord-lieut. of Ireland and Lords-lieut. of counties (see LIEUTENANT, LORD), the Lord Chancellor (see CHANCELLOR), Lord Privy Seal (see PRIVY SEAL), Lords of the Treasury (see TREASURY) and of the Admiralty (see ADMIRAL), the Lord High Admiral, Lord Great Chamberlain, and Lord Chamberlain (see CHAMBERLAIN, LORD), Lord High Constable (see CONSTABLE), Lord High Almoner (see ALMONER), Lord High Steward (see STEWARD), Lord Steward of the Household, Lords in Waiting, Lords of the Bedchamber (see BEDCHAMBER, LORDS OF THE), Lords Justices (see JUSTICES, LORDS), the Lord Chief Baron of Exchequer (q.v.), the Lord Chief-Justice (see JUSTICE, LORD CHIEF), the Lord Lyon (see LYON KING-AT-ARMS), the Lord Mayor of London, York, and Dublin (see MAYOR), and the Lords Provost of Edinburgh and Glasgow (see PROVOST). The committee of the Scottish parliament by whom the laws to be proposed were prepared, were called Lords of the Articles. The favored beneficiaries, who, after the Scottish Reformation, obtained in temporal lordship the benefices formerly held by bishops and abbots, were called Lords of Erection. Persons to whom rights of regality were granted in Scotland (see REGALITY) were termed Lords of Regality. The representative of the sovereign in the General Assembly of the Church of Scotland (see ASSEMBLY, GENERAL) is called the Lord High Commissioner. The judges of the courts of session and justiciary in Scotland have the title 'Lord' prefixed to their surname or some territorial designation assumed by them; and throughout the three kingdoms, judges are addressed 'My Lord' when presiding in court.

LORD, CHESTER SANDERS, M.A., LL.D.: American journalist: b. Romulus, N. Y., 1850, Mar. 18. He studied at Hamilton College, but was not graduated. He was for a time associate editor of the *Oswego* (N. Y.) *Advertiser*,

and in 1872 became one of the staff of the New York *Sun*, of which he is managing editor. He was elected a regent of the University of the State of New York in 1897.

LORD, Edwin Chesley Estes: American geologist and chemist: b. Brooklyn, N. Y., 1868, May 7. He was educated in Brunswick and Heidelberg, Germany, and was assistant professor of mineralogy and petrography in Harvard from 1888 to 1901. From 1901, Nov., to 1904 he was assistant in petrography and chemistry in the United States Department of Agriculture; from 1904, July 1, was petrographer of the division of tests, and since 1906, July 1, in the office of Public Roads in that department. He has published *Dissertation on Basalts of the Fichtelgebirge, Bavaria* (Heidelberg), and numerous papers in the bulletins of the U. S. Geological Survey and the U. S. Department of Agriculture, and in periodicals.

LORD, Eleanor Louisa, A.B., A.M., PH.D.: American educator: b. Salem, Mass., 1866, July 27. She studied in Smith College and in Bryn Mawr College, in America, and in Newnham College, Cambridge, England; and was fellow in history in Bryn Mawr, 1889-95. She taught in the Malden, Mass., High School, 1887-9; in Smith College, 1890-4; and in the Woman's College, Baltimore, after 1897. She has published *Industrial Experiments in the British Colonies of North America* (1898).

LORD, James Brown: American architect: b. New York, 1859, Apr. 26; d. there, 1902, June 1. He was graduated from Princeton in 1879 and after studying architecture practised his profession in his native city, where he designed the Appellate Court in Madison Square, the first of the Carnegie branch libraries, and 16 of the other 65. He was chosen as architect of the Memorial Building erected by the class of 1879 of Princeton.

LORD, John, LL.D.: lecturer: b. Portsmouth, N. H., 1812, Sep. 10; d. 1894, Dec. 15. He graduated at Dartmouth College 1833, and Andover Theological Seminary 1837; served two years as agent of the American Peace Society; preached in Congl. churches in New Marlborough and Stockbridge, Mass.; applied himself to historical study and lecturing 1840; spent 1843-46 in England lecturing on *The Middle Ages;* made his home in Stamford, Conn., 1855. Dr. Lord lectured in the principal cities of the United States and England on ancient, mediæval, and modern history. He received the degree LL.D. from the Univ. of the City of New York 1864, and was lecturer on history in Dartmouth College 1866-76. Dr. Lord published *Modern History for Schools* (Philadelphia 1850); *The Old Roman World* (1867); *Ancient States and Empires* (1869); and *Beacon-Lights of History* (1883).

LORD, John King, A.M., PH.D.: American educator: b. Cincinnati, O., 1848, Oct. 21. He was graduated at Dartmouth College in 1868. In 1869, he was made a tutor in Latin in Dartmouth; professor of Latin and rhetoric, 1872-80; professor of oratory and belles lettres, 1880-2; associate professor, 1882-92, and after 1892 professor of the Latin language and literature. He has edited many Latin text books and Chase's *History of Dartmouth College* (1891); is the author of an *Atlas of the Geography and History of the Ancient World* (1902), and has translated Hertzburg's *Geschichte der Römer im Alterthum* (1902).

LORD, Nathan, D.D., LL.D.: 1793, Nov. 28—1870, Sep. 9; b. Berwick, Me. After graduating at Bowdoin College 1809, and Andover Theol. Sem. 1815, he was pastor of the church (Congl.) at Amherst, N. H., 12 years; and was pres. of Dartmouth College 1828-63. His administration was successful, notwithstanding the exceeding distaste which many friends of the college felt for his opinions on slavery. Until he had passed 40 years of age he was classed among abolitionists; but later he publicly avowed his belief that 'slavery is an institution of God according to natural religion,' and 'a positive institution of revealed religion.' Dr. Lord died at Hanover.

LORD, Nathaniel Wright, E.M.: American chemist and mineralogist: b. Cincinnati, O., 1854, Dec. 26. He was graduated at the Columbia School of Mines in 1876. Since 1883 he has been chemist for the Ohio Geological Survey and the Ohio State Department of Agriculture, and since 1888 professor of metallurgy and mineralogy in Ohio State University. He is the author of *Notes on Metallurgical Analysis,* and of numerous papers on scientific subjects.

LORD, William Frewen: English historical writer: b. Brighton, Sussex, 1861, Feb. 23. He was educated at Trinity College, Cambridge; was attached to the Bombay civil service 1881-9, and was lecturer on and professor of modern history at the Durham College of Science, Newcastle-on-Tyne, from 1899 to 1904. He has published *The Lost Possessions of England* (1895); *Lost Empires of the Modern World; Life of Sir Thomas Maitland* (1897); *Development of Political Parties under Queen Anne* (1900); *England and France in the Mediterranean* (1901); *Counts of St. Paul* (1904); etc.

LORD, William Paine: American soldier and diplomatist: b. Dover, Del., 1838. He was graduated at Fairfield College, N. Y., in 1860, and at the Albany Law School in 1866. In the civil war he served as major of Delaware cavalry, and as judge-advocate on the staff of General Lew Wallace. After the war he was given a lieutenancy in the regular army, and served at Forts Alcatraz and Steilacoom and in Alaska, resigning in 1868. Since then he has practised law at Salem, Ore.;

was a state senator in 1878, and for 14 years sat on the supreme bench of the state. He became governor of Oregon in 1895, and at the expiration of his term in 1899 was appointed United States minister to Argentina. This position he continued to hold till 1903.

LORD'S DAY, THE: the first day of the week, the day on which (as recorded by all four of the Evangelists) the Lord Jesus rose again from the dead; therefore hallowed by the example of his apostles and in the usage of the church from earliest times, as the day of stated Christian assembly and public worship of God. There are differing views as to the origin of the observance of this day. It is nowhere in the Bible commanded to be sacredly observed: the fourth commandment of the Decalogue in terms applies to the *seventh* day. Yet its observance grew up by the side of that of the Hebrew Sabbath, not by any late and post-apostolic change, but in the practice of the apostles and of the churches under them. It was the day of stated Christian assembly: see Acts xx. 7; I Cor. xvi. 2; Rev. i. 10. The recently discovered *Teaching of the Apostles* (dating prob. A.D. 90—100) gives testimony to the same effect. The observance of this day might naturally arise, needing no positive enactment, in view of the fact that Christ's triumphal Resurrection, and his amazing and most comforting appearances to his disheartened disciples on this day, had put impressive honor on it; and that on this day, again, one week later, he appeared in the assembled company of the disciples. To this setting the day apart, above even the sacred seventh day of the vanishing Mosaic dispensation, significance must have been added by the giving of the Holy Spirit to the infant church on the Day of Pentecost which also was the first day of the week. For a long period, the old day and the new seem to have been observed side by side; but gradually the gifts of Divine Life through Christ overshadowed the Divine precept that had come only through Moses, so far at least as to give the Mosaic precept a new setting while preserving all its force and transfiguring it into higher sacredness in a new spiritual light. Thus the seventh day was slowly dropped from general Christian observance, giving place to the Lord's Day; perhaps with some remembrance of Christ's own claim when accused of dishonoring the Sabbath—that it 'was made for man,' and that he as the Son of Man was '*Lord* of the Sabbath.'

While the tendency of opinion as to the basis for observance of the Lord's Day is probably in the direction above indicated, in recent years, there are some who distinctly base its claim on the fourth commandment. Standing thus on legal and Old Testament ground, they are hard-pressed in argument by Seventh-Day Baptists and others who convict them of disobeying the very command which they magnify. However, it is to be noted that the whole Christian world agrees with them in

ascribing authority to the Decalogue—the authority of fundamental and universal truth, though cast in a provincial and transitory Hebrew mold. But the Christian world is gradually tending to seek its *final* authority whether for truth or for law, in the Son of God.

As to the mode of observing the Lord's Day, it is increasingly felt that the day is to be received as a Gift of God, a delight and honorable—man's day of privilege for rest in both body and soul, and for refreshment in the peace of God. Thus, it is to be set apart with joy from ordinary work, but not excluding works of necessity, and even calling for works of charity. The day as a privilege is being claimed by working-people in the United States more than was customary a few years ago. They are demanding that law shall reclaim and guard it for them. In this they have in view not its religious obligations, but its physical and social uses and blessings. There is no advocacy of any laws to enforce the religious observance of the day: these uses of it must be trusted to win their own way to men's hearts. On the continent of Europe, judged by the British and the earlier American standard, the day can scarcely be said to have a distinct observance.

For more full presentation on many points touched above, see SABBATH.

The Lord's Day, in Law.—In the United States there are no general laws governing the observance of the day. The only mention of the day in the federal constitution is in Art. 1, sec. 7, where it is provided that Sunday shall not be included in the 10 days within which the pres. may return any bill to congress. In the absence of definite U. S. laws, custom has provided for the closing of congress, federal courts, and executive depts., a partial suspension of work in the post-offices, and in times of peace a cessation of ordinary daily duty in the army and navy. This custom is observed also in state and municipal govts. There has been an abundance of local legislation in the various states since the landing of the Pilgrims, intended to secure a quiet, orderly observance of Sunday, and to relieve from causes of annoyance all persons who desire to employ that day in exclusively religious worship and work. The original Sunday laws of the states have been greatly modified in recent years. In Louisiana, there are no restrictions on ordinary daily transactions, excepting in legal and financial business, and theatrical performances are given and various kinds of sporting indulged, such as horse-racing, boating, and yachting. In some of the populous states, where balls, theatrical performances, and concerts are prohibited on Sunday, the laws provide an excuse for evading their provisions, in sanctioning religious or sacred concerts. Hence, various kinds of public entertainments may be given without fear of police intervention, if the entertainment is opened with the performance of a single piece of sacred music.

In many places public parks, where drinking is permitted without limitation, seaside resorts, base-ball grounds, athletic fields, boating and yachting courses, and other places of amusement, entertainment or recreation, are more crowded with people on Sundays than on week days; and this freedom is tolerated by local laws. In legal proceedings, a verdict may be received on Sunday as on any other *dies non*, but a judgment cannot be entered on such verdict on the same day. Warrants for treason, felony, and breach of the peace may be executed on that day. It has been held legal that where public policy or the prevention of irremediable wrong requires it, the courts may sit on Sunday and issue process. Sundays are computed in the time allowed for the performance of an act, but if the last day happen to be a Sunday, it is to be excluded, and the act must in general be performed on Monday. Notes and bills, however, falling due on Sunday must be paid on Saturday. In nearly every state the constitutionality of Sunday laws has been questioned on the ground of encroaching on personal liberty, and decisions *pro* and *con* have been rendered. Of late there is increasing tendency to laws which shall at least rescue Sunday from ordinary business and toil—making it a rest-day for working people.

LORDS, HOUSE OF. See PARLIAMENT.

LORD'S PRAYER, THE: sometimes called 'Our Father' or the 'Pater Noster,' from the first two words in English or in Latin; and called the 'Lord's Prayer' because taught by our Lord to his disciples. The prayer is given in the Bible, in Saint Matthew vi., and in Saint Luke xi. The prayer is given as a model, and in Matthew is introduced by the words: 'After this manner therefore pray ye.' In Luke the introduction is: 'When ye pray say,' and is followed by the words. There is a difference in the form as given in the two gospels mentioned. In Matthew the words are: 'Our Father who art in heaven, hallowed be thy name; thy kingdom come; thy will be done as in heaven so upon earth. Give us to-day our daily bread; and forgive us our debts, as we also have forgiven our debtors; and lead us not into temptation; but deliver us from evil. Amen.' In Luke the words are: 'Father, hallowed be thy name; thy kingdom come. Give us day by day our daily bread; and forgive us our sins; for we also forgive everyone indebted to us; and lead us not into temptation.'

The doxology, 'For thine is the kingdom, and the power, and the glory for ever, Amen,' is not found in many of the best ancient authorities, and for that reason it is omitted in Tischendorf's eighth edition of the New Testament and in the Wescott and Hort Greek New Testament.

The prayer was introduced or taught in the 'Sermon on the Mount,' and as given in Matthew, consists of nine parts—one salutation or invocation, seven petitions, and

'Amen.' In the salutation there are three distinct points; first, the word 'Father,' implying fatherhood, sonship, children of. Second, the word 'Our,' which includes all mankind, a profession of brotherhood, a manifestation of charity in the most effective manner. Third, 'Heaven,' where God is in His glory, for where His glory is revealed that is heaven. The seven petitions are usually divided into three parts. The first three petitions refer to the honor of God; the last three to our own advantage; and the fourth petition has an element of both the first and the last groups. The first petition is, 'Hallowed be thy name,' because by the name of a thing we express the object itself. 'Hallowed be,' or as expressed by the Greek, 'Sanctified be,' thy name among men—thy external glory throughout the whole world. The second petition is, 'Thy kingdom come'—internally and externally without any limitations. The third petition is, 'Thy will be done as in heaven so upon earth,' which relates to free co-operation of our wills with the will of God; that obedience here will be as perfect as in heaven, that perfect peace may reign on earth. The fourth petition is, 'Give us to-day our daily bread.' Various authorities differ as to the exact meaning of the word qualifying bread, some holding that it makes the word bread mean spiritual food alone; others, bodily food, necessary food for the body; others that it implies food for both soul and body. The fifth petition is, 'And forgive us our debts (trespasses) as we also have forgiven our debtors (those who have trespassed against us). The petitions preceding related to something good to be obtained; the fifth petition relates to deliverance from evils. The word translated 'debts' or 'trespasses' is translated 'sins' in the gospel of Luke. This petition asks that both the forgiveness and the perfection of the forgiveness on the part of God will correspond to our forgiveness of our enemies. The sixth petition is, 'And lead us not into temptation.' The seventh petition is, 'But deliver us from evil.' The word 'but' in this place confirms what has been said and forms the transition to what follows. Differences of opinion have existed as to the meaning of the word 'evil,' some authorities regarding it as meaning the 'evil one,' others as moral evil, anything that hinders spiritual progress. The fifth petition relates to freedom from sin, the sixth to deliverance from sin, the seventh to warding off all spiritual dangers. The 'Amen' is a common ending to prayer, usually derived from the Hebrew verb meaning 'to be firm,' or from a Hebrew noun meaning 'truth,' and commonly rendered 'so be it' or 'may it be so.' In this place its signification is usually regarded as meaning a stronger confirmation of what has just been said. In places in the liturgy of the Roman Catholic, the Protestant Episcopal, and the Greek churches where the word 'Amen' occurs, it is usually said by the server or clerk; but the 'Amen' belonging to the 'Lord's Prayer' is said by the celebrant of the mass.

Some of the early writers divided the petitions into six, thus joining the sixth and seventh. Many Protestant writers make this division, but Roman Catholic writers follow Saint Augustine, and divide the prayer into seven petitions. Lutheran writers generally follow this division, also the Protestant writers Bleck, Hilgenfield, Keil, and Tholuck. The gradation of the petitions is remarkable: First, the honor and glory of God is sought; second, our own greatest good; third, the necessary means to attain eternal life; fourth, necessities for the present life; fifth, to be freed from the greatest evil; sixth, to be freed from the evil next to the greatest; seventh, to be freed from all evil. The fifth, sixth, and seventh petitions are directed against the respective impediments opposed to the good mentioned in the second, third, and fourth petitions.

The doxology is explained in various ways; as a liturgical addition, as an ancient continuation used by the priests and then the people. The 'kingdom' in the doxology seems to refer to the first and second petitions; the 'power' to the third petition; and the 'glory' to the following petitions.

Directly following the 'Lord's Prayer,' in the gospel of Saint Matthew vi. 14, there is an extension or explanation of the fifth petition, giving again the conditions of forgiveness; 'For if ye forgive men their trespasses, your heavenly Father will also forgive you.'

Commentators differ as to the exact relation between the form of the 'Lord's Prayer' in the gospel of Matthew and in Luke. It is held by many authorities that the prayer was taught on two different occasions, to different persons, except the apostles who were present on both occasions. Both forms were given as models, and both contain the essentials. The prayer occurs in all ancient liturgies except the so-called Clementine liturgy—given in the Apostolic Constitutions. In all the principal liturgies it occurs shortly before Communion.

Many polyglot collections of the prayer have been published from the 16th century downward, the most remarkable of which were those of John Chamberlayne in 150 languages (1715), of Conrad Gesner in 200 (1748), and that of Padre Hervaz in 307 (1787). There are expositions of the Lord's Prayer by Origen, Chrysostom, Gregory Nyssa, Cyprian, Luther, Leighton, and Tholuck.

Bibliography.—Maas, *The Gospel According to Saint Matthew;* Kenrick, the gospels of Saints Matthew and Luke in *The Four Gospels;* Saint Thomas Aquinas, *The Lord's Prayer;* and the following authors in various writings: Bleck, Meyer, Kiel, Schanz, Spirago, Tholuck, W. Grimm, Hilgenfield, Peischel, Saint Augustine, and Saint Alphonsus.

LORDS SPIRITUAL: in Great Britain, archbishops and bishops of the Anglican Church, who are given seats

in the house of lords. The present primate of all England, who is the 95th Archbishop of Canterbury, was nominated by King Edward soon after the death of Queen Victoria, and stands at the head of the Lords Spiritual. Among the most important and least known of the prerogatives of the Archbishop of Canterbury is that of heading the commission of great dignitaries of the realm who form a species of council of regency in the event of any time intervening between the demise of a sovereign and the assumption of the reins of government by his successor. The Archbishop of Canterbury, in addition to an official residence within the cathedral precincts at Canterbury, and a stately palace in London, possesses a stipend of $75,000 a year. But few are aware of the sources from which this money is derived. It does not form part and parcel of the supplies voted every year by parliament for the administration of the government. Nor is it derived from the revenues of the state, that is to say, from the pockets of the taxpayers. The Church of England is enormously rich. Not all ecclesiastical property was diverted from religious uses at the time of the Reformation. Much of it was left to endow the Church of England, and to-day the annual income of the latter is estimated at near $40,000,000, the administration of which is vested in the hands of a body known as the Ecclesiastical Commissioners, who pay to the archbishops and bishops their stipends, provide salaries for the minor dignitaries of the church, and spend the remainder in improving the parochial endowments and buildings, and in providing funds for additional clergy. The Ecclesiastical Commission consists of the two archbishops, namely, of Canterbury and of York; of all the bishops of English and Welsh dioceses; of the deans of Canterbury, St. Paul, and Westminster; of five cabinet ministers, three judges of the High Court of Judicature, and twelve laymen, all of them churchmen of the Church of England, two being appointed by the Archbishop of Canterbury and the remainder by the crown.

The commissioners have the power of creating new bishoprics, deaneries, and archdeaconries, of creating new parishes, of uniting existing ones, etc. But any of the more important steps which they take have to be ratified by the king and council, that is to say, by the sovereign sitting with a quorum of his Privy Council, and when thus ratified the acts of the Ecclesiastical Commissioners have the power of an act of parliament.

The Archbishop of Canterbury, like the Archbishop of York and the 24 bishops who represent the Established Church in the house of lords, is not a peer of the realm, but only a Lord Spiritual of parliament. The Lords Spiritual have no right to demand trial by the house of lords as peers, but are amenable to the jurisdiction of the ordinary courts of law. Although the Lords Spiritual of the upper house are distinct from the Lords Temporal,

they do not vote separately, but jointly, forming for purposes of legislation one estate. The prelates vote on every subject brought before the lords, except in trials for high treason and other cases of a criminal nature. On such occasions they never attend or vote; this, however, being in deference to those canon laws which forbid them from participating in matters of blood, and not owing to any parliamentary requirement. There can be no quorum of the house of lords without the presence of an archbishop or bishop, two peers and a prelate being needed to constitute a house of lords for the transaction of business, and the Spiritual Lords cannot vote or even take their seats in the house unless robed in their ecclesiastical vestments, with rochet, lawn sleeves and mortar-board cap complete. The discrimination between the peers of the realm and the Lords Spiritual of parliament also extends to the families of the latter.

LORD'S SUPPER, THE: one of the ordinances of the Christian Church; so called from its being instituted at the supper of the Jewish Passover by Jesus Christ, whom his disciples styled the Lord or Master. It receives also the names Eucharist and Communion (q.v.), and is very frequently called a (or even *the*) Sacrament (q.v.). With the exception of the Quakers, all sects of Christians, however different their views as to its nature, agree in observing it as one of the most sacred rites of religion. See MASS; REAL PRESENCE; TRANSUBSTANTIATION.

The history of the institution of this sacrament is recorded in the Gospels of Matthew, Mark, and Luke, and in Paul's First Epistle to the Corinthians in these words: 'As they were eating, Jesus took bread and blessed and brake it; and he gave to the disciples and said, Take, eat; this is my body. And he took the cup and gave thanks, and gave to them saying, Drink ye all of it; for this is my blood after covenant, which is shed for many unto remission of sins.'—Matt. xxvi. 26-28. 'As they were eating, he took bread, and when he had blessed, he brake it, and gave to them, and said, Take ye: This is my body. And he took a cup, and when he had given thanks, he gave to them, and they all drank of it, and he said unto them, This is the blood of the covenant, which is shed for many.'—Mark xiv. 22-25. 'He received a cup, and when he had given thanks, he said, Take this and divide it among yourselves. And he took bread, and when he had given thanks, he brake it, and gave to them, saying, This is my body which is given for you: this do in remembrance of me. And the cup in like manner after supper, saying, This cup is the new covenant in my blood, that which is poured out for you.'—Luke xxii. 17-20. The corresponding passage in I Cor. xi. 23-28, reads: 'The Lord Jesus took bread; and when he had given thanks, he brake it, and said, This is my body, which is for you: This do in remembrance of me. In like manner also the cup, after the supper, saying, This cup is the new cove-

nant in my blood; this do as oft as ye drink it, in remembrance of me. . . . Whosoever shall eat the bread or drink the cup of the Lord unworthily, shall be guilty of the body and the blood of the Lord.' With these texts is coupled by Catholic divines the remarkable discourse of Jesus at Capernaum (John vi. 32-71), in which occur these words which offended many even of his disciples, 'He that eateth my flesh and drinketh my blood hath eternal life.'

In all the churches founded by the apostles the Lord's Supper was introduced. In the 1st and 2d centuries this rite was celebrated in connection with the *agapæ* or *love-feast.* After the third century, when the congregations became more numerous, the *agapæ* ceased, and the Lord's Supper was from thence celebrated separately in the churches, in such a way that all present could partake, with the exception of catechumens (that is, Christians not yet baptized) and unbelievers. These were obliged to withdraw when the celebration of the Lord's Supper commenced, because communion was considered as a mysterious act, which was to be withheld from profane eyes. The deacons carried the bread of life to those whom sickness or imprisonment had prevented from being present at the meeting of the congregation. It was always believed to possess a peculiar efficacy, and ideas of the awful and mystical were associated with it. From the first, Christians ascribed supernatural power to the rite, and the consecrated bread and wine were regarded as more than mere bread and wine, and as having become, in some mysterious way, the body and blood of our Saviour. In the early church we find no scientific formulation of the change undergone by the sacred elements, but in the 9th century, in consequence of the attacks of Berengarius (q.v.) on the doctrine of the Real Presence, the term, transubstantiation, commonly ascribed to Paschasius Radbertus first, came into use to describe metaphysically the real and objective change of the elements of bread and wine into the body and blood of Christ. This term was adopted by the Council of Rome in 1079, and confirmed in 1215, in the Fourth Lateran Council, by Innocent III., and has ever since been employed by the Roman Catholic Church as the proper expression of her faith in the Eucharist. The Council of Trent in the 16th century laid it down as of faith to confess the 'change of the whole substance of the bread into the body, of the whole substance (*substantiæ*) of the wine into the blood [of Christ], only the appearances (*species*) of bread and wine remaining; which change the Catholic Church most fitly calls Transubstantiation.' The Roman Catholic Church holds that the Eucharist has been both a sacrament and a sacrifice from the beginning. This, she declares, is evident from Christ's words of institution, as narrated in the synoptic gospels and from St. Paul's words in his first Epistle to the Corinthians. And un-

broken testimony from the Apostles through the Fathers of the Church, she further avers, bears ample evidence to her claim; besides this, she claims that her own witness as the duly divinely appointed guardian of the deposit of revelation and its infallible interpreter commissioned to teach all nations, is sufficient seal to the truth of the doctrine. As a sacrament it is the true body and blood of Christ under the appearance of bread and wine to be partaken by the faithful as a means of grace and union with Christ; as a sacrifice it is the unbloody oblation of the body and blood of Christ by a duly appointed minister, that is, priest, by whom alone the elements can be consecrated. Such she declares has been the Christian teaching and practice from the beginning. The reception of the sacrament under both kinds, that is, under the forms of both bread and wine, was general until the Middle Ages, when communion under one kind, bread alone, began to be adopted, partly to avoid the danger of spilling the consecrated wine and partly to counteract a growing heresy that Christ was not received whole and entire under either kind alone. The Council of Constance, in the 15th century, made it universally obligatory to communicate under one kind to meet the heresy of Huss and Jerome of Prague. The Protestant reformers in the 16th century averred that the church had deviated in the celebration of the Lord's Supper from the purpose of Christ and the example of the apostolic age, and both the German and Swiss reformers agreed in rejecting the doctrine of Transubstantiation and the mass, and maintaining that the Lord's Supper ought always to be celebrated before the whole congregation, and with the administration of both bread and wine. In explaining the words by which the supper was instituted, Luther and Zwinglius differed, and their different opinions on this subject formed the principal subject of the dissension between the Lutheran and Calvinistic churches. Luther took the words, 'This is my body,' etc., in their literal sense, and thought that the body and blood of Jesus Christ were united, in a mysterious way, with the bread and wine, which, however, remain unchanged, so that the communicant receives, in, with, and under the bread and wine, the real body and blood of the Redeemer. Zwinglius, on the other hand, understood the words in a figurative sense, and supposed that Jesus Christ meant to say, 'The bread and the wine represent my body and my blood,' and maintained, therefore, that the bread and wine were mere signs of the body and the blood of Christ, and that the Lord's Supper was a mere commemoration of the death of Christ, and a profession of belonging to his church, and this view was in substance adopted by the Socinians and Arminians. From this difference of opinion arose a violent dispute between Luther and Zwinglius, which in later times has been continued between the Lutheran and Calvinistic divines.

The opinion advanced by Calvin, by which a spiritual presence of the body and blood of Christ is supposed in the communion, by partaking of which the faithful receiver is brought into union with Christ, through the medium of the Holy Ghost, though it came nearer to the Lutheran doctrine than that of Zwinglius did, yet was essentially different, and therefore also met with a strong opposition from the strict adherents of Luther. Melanchthon inclined to the Calvinistic notion, and so did many other Lutheran divines, who were called by the opposite party Philippists and Crypto-Calvinists. The *formula concordiæ*, or articles of religious peace, suppressed the Crypto-Calvinists in the greatest part of the Lutheran Church, and established the idea of Luther, consequently there was a final separation of the Lutheran and Reformed or Calvinistic churches, but in recent times many Lutheran divines have inclined to the Calvinistic doctrine. The Greek Church has substantially held the doctrine of Transubstantiation in its whole extent. The Oriental Christians differ from the Western, in using leavened bread in the Lord's Supper, and in administering it to children (see GREEK CHURCH). It thus appears that the differences between the contending churches hinge on the *mode* in which the body and blood of Christ are present in the elements of bread and wine, for that they are in some way present is admitted by them all. The Protestant churches hold that *presence* means presence in efficacy, and will admit that it is 'real' in the sense of being efficacious, though not in the sense of being corporeal. However, when they are called on to define efficacy they differ in this, that some mean by it a sacrificial, and others a mysterious supernatural efficacy, emanating from Christ's glorified body. The confessions of the Protestant churches were framed expressly to conciliate the Lutherans, and contain, in consequence, more of the mystical element than is consistent with the sentiments of the framers, as expressed in their writings. The 28th article of the Church of England, while repudiating Transubstantiation as 'repugnant to the plain words of Scripture,' declares 'that to such as rightly, worthily, and with faith receive the same, the bread which we break is a partaking of the body of Christ, and likewise the cup of blessing is a partaking of the blood of Christ.' It further declares that 'the body of Christ is given, taken, and eaten in the supper only after a heavenly and spiritual manner. And the means whereby the body of Christ is received and eaten in the supper is faith.' The Westminster Confession, chap. xxix., s. 6 and 7, thus formulates the doctrine adopted by the Presbyterian Church of Scotland, which in the main agrees with that propounded by Calvin: 'That doctrine which maintains a change of the substance of bread and wine into the substance of Christ's body and blood (commonly called Transubstantiation) by consecration of a

priest, or by any other way, is repugnant not to Scripture alone, but even to common sense and reason, overthroweth the nature of the sacrament, and hath been and is the cause of manifold superstitions, yea, of gross idolatries. Worthy receivers, outwardly partaking of the visible elements in this sacrament, do then also inwardly by faith, really and indeed, yet not carnally and corporally, but spiritually, receive and feed upon Christ crucified, and all benefits of his death: the body and blood of Christ being then not corporally or carnally in, with, or under the bread and wine; yet as really, but spiritually, present to the faith of believers in that ordinance, as the elements themselves are to their outward senses.' The elevation, adoration, and carrying about of the host, practised in the Greek and Roman Catholic churches, is thus spoken of in the 28th article of the Anglican Church: 'The sacrament of the Lord's Supper was not by Christ's ordinance reserved, carried about, lifted up, or worshipped.' While the Roman Catholic Church makes its communicants receive the consecrated wafer with the mouth from the hands of the priest, the Protestant churches put the bread and the chalice into the hand of the communicant.

LORE, n. *lōr* [AS. *lar*, teaching: Icel. *lær;* Dan. *läre;* Ger. *lehre*, lore]: learning; erudition; instruction; in *OE.*, workmanship. LORING, n. *lōr'ĭng*, in *OE.*, instructive discourse.

LORE, n. *lōr* [L. *lorum*, a strap or thong]: in *birds*, the space between the bill and the eye; a corneous, angular apparatus observable in the mouths of certain insects.

LOREL, n. *lŏr'ĕl* [Gael. *lobhar*, a leper, a disgusting creature]: in *OE.*, a base or worthless person; a rogue; connected with LOAFER: see another spelling in LOSEL.

LORE'LEI: See LURLEI.

LORENZ, *lō'rĕnts*, ADOLF, M.D.: Austrian physician, the apostle of 'bloodless surgery: b. northern Austria, 1854, Apr. 21. His father was a watchmaker in a small country town, and there Lorenz received his early education. In poor circumstances, the winning of a scholarship and tutorial fees enabled him to enter the Univ. of Vienna, whence he graduated in 1880, and became asst. to Prof. Albert, on whose advice he adopted orthopedic surgery, when poisoning of the hands through the use of strong antiseptics in practice had incapacitated him from general work. Improving on the Hoffa cutting method, introduced in 1890, of reducing congenital dislocations of the hip bone, and adopting bone-setters' methods, Lorenz scientifically developed the plan of reducing the congenitally dislocated hip by manipulation, the head of the bone being eventually placed in the socket with a distinct click, while the patient is under an anæsthetic. Lorenz demonstrated his bloodless operation to the Medical Congress

at Berlin in 1895, and since then it has been almost universally adopted. In 1902-3, he visited the U. S., successfully performing many operations in Chicago and New York, receiving from the latter the freedom of the city for his operations on the poor in metropolitan hospitals. He was appointed professor of surgery in the University of Vienna, and head of the orthopedic department in the General Hospital of Vienna. He has also originated operations to straighten club feet and limbs contracted by paralysis and inflammation, besides inventing several useful orthopedic instruments. He is an accomplished linguist, speaking German, French, Italian, and English; contributes voluntarily to medical periodicals, and is the author of *Ueber die unblutigchirurgische Behandlung der angeborenen Hüftverrenkung mittels der functionellen Belastungsmethode* (1896); *Orthopädie der Hüftgelenks-Kontrakturen und Ankylosen* (1889); *Das instrumentelle Kombinierte Redressement der Hüftgelenks-Kontrakturen* (1898); *Ueber die Heilung der angeborenen Hüftgelenks-Verrenkung durch unblutige Einrenkung und Functionelle Belastung* (1900).

LORENZ, Ottokar: German historian: b. Iglau, 1832, Mar. 7. His first work was *The Consular Tribunal* (1855). He was appointed professor of history in the University of Vienna, 1862, and in 1885 accepted a call to the University of Jena. Among his writings are: *German History in the 13th and 14th Centuries* (1863); *Sources of Mediæval German History* (1870); *History of Alsace*, with Scherer (1871); *History and Politics* (1876); *Genealogical Manual of the History of European States* (1895).

LORETO, *lō-rā'tō*, or Loretto, *lō-rĕt'tō:* city of the province of Ancona, kingdom of Italy; pop. 5,300. Though of some architectural pretensions, it is notable chiefly as the site of the celebrated sanctuary of the Blessed Virgin Mary, called the *Santa Casa*, or Holy House. The Santa Casa is reputed to be the house, or a portion of the house, in which the Virgin lived in Nazareth, which was the scene of the Annunciation, of the Nativity, and of the residence of the Lord Jesus with his mother and Joseph; and which, after the Holy Land had been finally abandoned to the infidel on the failure of the Crusades, is believed to have been miraculously carried by angels through the air, first, 1291, to Fiume in Dalmatia, thence, 1294, Dec. 10, to Recanati, whence it was finally transferred to its present site. Its name (Lat. *Domus Lauretana*) is derived from Laureta, the lady to whom the site belonged. Although numberless pilgrims resort to the sanctuary, and although indulgences have been attached by Julius II., Sixtus V., and Innocent XII. to the pilgrimages, and to the prayers offered at the shrine; yet the truth of the legend is no part of Catholic belief, and Rom. Catholics claim to hold themselves free to examine critically its truth, and to

admit or to reject it according to the rules of historical evidence. The church of the Santa Casa stands near the centre of the town, in a piazza which possesses other architectural attractions, the chief of which are the governor's palace, built from the designs of Bramante, and a fine bronze statue of Pope Sixtus V. The great central door of the church is surmounted by a splendid bronze statue of the Madonna; and in the interior are three magnificent bronze doors filled with bas-reliefs, representing the principal events of scriptural and ecclesiastical history. The celebrated Holy House stands within. It is a small brick-house, with one door and one window, originally of rude material and construction, but now, from the devotion of successive generations, a marvel of art and of costliness. It is entirely cased with white marble, exquisitely sculptured, after Bramante's designs, by Sansovino, Bandinelli, Giovanni Bolognese, and other eminent artists. The subjects of the bas-reliefs are from the history of the Virgin Mary in relation to the mystery of the Incarnation, e.g., the Annunciation, the Visitation, the Nativity—with the exception of three on the e. side mainly referring to the legend of the Holy House itself and of its translation. The rest of the interior of the church is rich with bas-reliefs, mosaics, frescoes, paintings, and carvings in bronze. Of this material, the finest work is the font, a masterpiece of art. The Holy House having been at all times an object of devout veneration, its treasury of votive offerings is one of the richest in the western world. It suffered severely in the French occupation of 1796, but it has since received numerous and most costly accessions. The frescoes of the Treasury Chapel are among the finest outside of Rome. Consult: Caillu, *Histoire, Critique et Relig. de N. D. de Lorette* (1843); Hutchinson, *Loreto and Nazareth* (1863); Jerome Angelita, *Historie della Translatione della Santa Causa;* Kenrick, *The Holy House of Loreto;* Meyrick, article on Loreto in *Christ, Remembrances;* Stanley, *Sinai and Palestine;* Zucchi, *Istoria di Loreto.*

LORETO: Peru, an interior department watered for thousands of miles by the Marañon and its tributaries; area, 288,456 square miles; pop., chiefly Indians, 1896, 100,596. The quickest route from the coast to this province, which is only about 700 miles distant in a direct line, is round the northern coast of South America and up the Amazon, a journey of 6,500 miles. Loreto is separated from the coastal departments by the Andes, has a tropical climate, and is densely forested; the chief products are rubber and salt. The principal towns are Moyobamba (the capital, pop. 10,000), Taropoto, and Iquitos.

LORETTE, ANCIENNE, *ân-sē-ĕn lō-rĕt:* Quebec, Canada, a village seven miles southwest of Quebec city, with industries connected with the waterworks of Quebec. Pop. 1,600. Three miles to the north is INDIAN or JEUNE

LORETTE, peopled by about 300 Christianized Indians, descended from the last of the Huron Indians who had found a refuge at Ancienne Lorette in 1650. The settlement was removed to Jeune Lorette in 1697. Jeune Lorette commands a fine view of Quebec for which it is visited, as also for the falls of Lorette, and for its ancient chapel and statue of the Virgin, a replica of those at Loreto, Italy.

LORGNETTES, n. plu. *lŏrn-yĕts'* [F. *lorgnette*, an opera-glass—from *lorgner*, to glance at]: double eye-glasses of an expensive kind, opening with a spring—chiefly used by ladies; small opera-glasses.

LORIA, *lō'rē-â*, ACHILLE: Italian economist: b. Mantua, 1857. He studied law at Bologna, and proceeding successively to Rome, Berlin, and London, made a study of economical problems. In 1881, he was appointed professor of economics at Siena and 10 years later at Padua. He has approached the subject of wealth distribution and land-tenure in a hopeful spirit of optimism, and has published many works on the subject. Among his writings are: *Studii sul Valore della Moneta* (1891); *La Terra ed il Sistema sociale* (1892); *La Costituzione economica odierna* (1889); and *Il Capitalismo et la Scienza* (1901).

LORICA'TA: in zoology, (1) the group of pagolins (see MANIS); (2) the group of *Crocodilia;* (3) a group of decapod *Crustacea*, which includes the spiny lobsters (*Palinurus*, etc.), and the bear-crabs (*Scyllarus, Ibacus*, etc.). These forms are large, with thick shells and without pinching claws. All are edible, the spiny lobster replacing the true lobster as an article of food in the warmer parts of the earth.

LORICATE, v. *lŏr'ĭ-kāt* [L. *loricātus*, covered with a breastplate of metal—from *lorīcă*, a coat of mail]: to cover with a coat of mail; to plate over; to cover with a crust or coating. LOR'ICATING, imp. LOR'ICATED, pp.: ADJ. covered or clad with horny or bony plates or scutes, like the crocodile; incrusted. LOR'ICA'TION, n. *-kā'shŭn*, the operation of covering anything with a plate or crust for defense, as against the action of fire. LORICATA, n. plu. *lŏr'ĭ-kā'tă*, those reptiles which, like the crocodile, have bony plates developed in their skin. LORICA, n. *lō-rī'kă* or *lŏr'ĭ-kă*, applied to the protective case with which certain infusoria are provided.

L'ORIENT, *lō-rē-ŏng':* seaport of France, dept. of Morbihan, at the confluence of the Scorff and Blavet, lat. 47° 48′ n., and long. 3° 25′ w. It is a well-built town, but rather dull-looking. The harbor, dockyard, and arsenal are among the best and largest in France, and the place ranks as a fortress of the third class; but its commerce received a blow at the Revolution in 1789, from which it has never recovered. L'Orient has a communal college, a school of navigation, and another of

marine artillery. The inhabitants are engaged chiefly in ship-building and the allied occupations. The only important manufacture is that of hats. L'Orient owes its origin to the French East India Company, which built an establishment here in 1666, for the purpose of trading to the East (whence the name of the town). Pop. (1901) 44,640.

LORIKEET, *lŏr'ĭ-kēt* [see LORY]: name of various Australian parrots, genera of ord. *Psittaci*, of most brilliant scarlet or crimson plumage; gregarious, and flying in immense flocks. The papillæ of their tongues are developed into bristly hairs with which they gather honey from flowers. They are found also in the Eastern Archipelago.

LORIMER, *lŏr'ĭ-mėr* [Fr. *lormier*—from Lat. *lorum*, a thong]: maker of bits, spurs, stirrup-irons, metal mountings for saddles and bridles, and generally of all articles of horse furniture. In London, the lorimers, who had previously formed part of another guild, were incorporated by letters-patent 1712; in the Scottish burghs, they have been comprehended as a branch of the corporation of Hammermen. Cutlers, locksmiths, and brass-founders have been considered as in the exercise of branches of the lorimer's art.

LORIMER, *lawr'ė-mėr*, GEORGE CLAUD, D.D.: Baptist minister: b. Edinburgh, Scotland, 1837; d. Aix-les-Bains, France, 1904, Sep. 7. His father died when Lorimer was young, and he was brought up by his step-father, who was connected with the theatrical profession in Edinburgh. Lorimer attended school in that city but afterward went to sea. Returning, he became assistant stage-manager at the Queen's Theatre, Dublin. He was very studious, and cultivated a knowledge of the classics. He came to America 1855 and played in Louisville, Ky. Then, at the age of 18, becoming a Christian convert, he left the stage, joined a Baptist church, entered on a collegiate course at Georgetown, Ky., and received the degree A.M., and later D.D. from Bethel College. He was ordained at Harrodsburg, Ky., 1859, taking charge of a church at Paduca the next year. Afterward he was called to the Walnut Street Church, Louisville, Ky. In 1868, he removed to Albany, N. Y., and after two years, to the Shawmut Ave. Bapt. Ch., Boston, where he drew large audiences. Soon afterward he took charge of the Tremont Temple Bapt. Ch., in Boston, and remained there six years, at the same time being associate editor of the *Watchman*. He was called to the First Bapt. Ch., Chicago, 1879; after about 12 years' service there he was recalled to Tremont Temple, and in 1901 went to the Madison Ave. Bapt. Ch., N. Y. He published numerous works, including *Isms Old and New* (1882); *Under the Evergreens* (1872); *The Great Conflict* (1876); *Studies in Social Life* (1886); *Christianity and the Social State;*

Christianity in the Nineteenth Century; Messages of To-day to the Men of To-morrow (1897); and a *Master of Millions* (1903), a story of modern life.

LORIMER, George Horace: American journalist: b. Louisville, Ky., 1868, Oct. 6. He is a son of G. C. Lorimer (q.v.), and was educated at Colby College, and at Yale. Entering the field of journalism, he advanced steadily in his profession, and since 1899 has been editor-in-chief of the *Saturday Evening Post*, Philadelphia. He has written *Letters from a Self-made Merchant to his Son* (1902); *Old Gorgon Graham* (1904); *The False Gods* (1906); etc.

LORIMER, John Henry: English painter: b. Edinburgh, 1856. He was educated at the Edinburgh Academy and University, and began his art studies at the Royal Scottish Academy. One of his pictures was admitted to the annual exhibition of that institution when he was but 19. His most important exhibited pictures are *The Ordination of Elders; Pot Pourri; The Eleventh Hour* (1896), which received a second class medal at the Salon, and in 1900 was awarded a gold medal at the Paris Exposition. In 1894, the French government bought his *Benedicite*, which is now in the Luxembourg, where his portrait of Colonel Anstruther Thompson has also been deposited.

LORIMER, Norma Octavia: Scottish novelist: b. Auchterarder, Perthshire, 1864. She has been an extensive traveler, having spent three years in the United States, and has written *Josiah's Wife; By the Waters of Sicily* (1901); *Catherine Sterling* (1902); *On Etna* (1904); *Queer Things about Sicily* (1905); etc.

LORING, *lōr'ĭng*, Charles Greeley: American lawyer and orator: b. Beverly, Mass., 1794; d. 1868. He was graduated from Harvard in 1812 and practised his profession in his native city, becoming in 1857 actuary of the Massachusetts Hospital Life Insurance Co. In 1862, he entered the state senate. He was of much prominence as an orator and was the author of *Neutral Relations between the United States and England* (1863); *Life of William Sturgis* (1864).

LORING, Charles Greeley: son of the preceding: b. Boston, 1828; d. Pride's Crossing, Beverly, Mass., 1902, Aug. 20. He was graduated from Harvard in 1848 and served in the Union army during the civil war, being brevetted major-general of volunteers at its close. He became a trustee of the American Museum of Fine Arts in 1873 and was the executive officer of the institution from 1876 until his death.

LORING, Edward Greeley: American jurist: b. Massachusetts, 1802; d. 1890. He was graduated from Harvard, and for many years was probate judge and United States commissioner in Boston. While holding this post he sent back into slavery the negro Anthony Burns, and

for this act was removed from the bench. In after years he was appointed by President Lincoln judge of the Court of Claims, which post he resigned in 1877.

LORING, Ellis Gray: American lawyer: b. Boston, 1803; d. 1858. He was educated at the Boston Latin School, entered Harvard in 1819, but without graduating left college and studied law. In 1827, he was admitted to the bar, where he soon won high distinction. He was one of the first pleaders for the abolition of slavery, and one of the founders of the first anti-slavery society, in Boston, 1832, whose constitution he wrote. As a defender of fugitive slaves he gave freely of his time and talents, and shared the odium visited upon all the early abolitionists. Before the Supreme Court of Massachusetts he made a memorable defense of a slave-child called Med, by which, against so formidable an opponent as B. R. Curtis, he secured a decision declaring that every slave brought into that state thereby became legally free. The effect of his convincing argument was both instantaneous and lasting, and his triumph was a substantial service to the anti-slavery cause. He published numerous addresses on the slavery question.

LO'RING, George Bailey, M.D.: agriculturist: b. North Andover, Mass., 1817, Nov. 8; d. Salem, Mass., 1891, Sep. 14. He graduated at Harvard 1838, and at its medical school 1842; was surgeon to the Chelsea Marine Hospital 1843-50; commissioner to revise the U. S. marine hospital system 1849; postmaster at Salem, Mass., 1853-57; delegate to the national republican convention 1868, 72, 76; chairman Mass. republican committee 1869-76; U. S. centennial commissioner 1872-76; prés. of the Mass. senate 1873-77; member of congress 1876-81; and U. S. commissioner of agriculture 1881-85. He had been president of the New England Agricultural Soc. since 1864, and was widely known as an orator. His notable addresses comprise those at the dedication of memorial tablets at Boston, Mass. (1866); bi-centennial celebration of the settlement of Dunstable (1873), and of Sherborn (1874); anniversary of the massacre at Swanzey (1875); centennial of resistance to the British at the n. bridge, Salem (1875); *Relation of Agriculture to the State in Time of War* (1862); *Classical Culture* (1866); *Eulogy on Louis Agassiz* (1873); *The Cobden Club and the American Farmer* (1880); and the address at the national cotton convention at Atlanta (1881). He also was a frequent contributor to leading agricultural publications.

LORIOT, n. *lŏr'ĭ-ŏt* [F. *loriot*—from OF. *loriol* and *oriol*—from L. *aurĕŏlŭs*, golden—from *aurum*, gold]: the yellow gold-colored bird; a bird called a witwall; the oriole. See Witwall.

LORIS, n. *lō'rĭs* [*loris* or *lori*, native Indian name]: genus of *Lemuridæ*, differing from the true lemurs in having a round head and short muzzle, very large eyes,

and no tail. The two species known are natives of the E. Indies. The largest species, *L. tardigradus*, is not so large as a cat; the other, *L. gracilis*, is much smaller. They are nocturnal animals, and spend the day generally sleeping attached to a branch, which they grasp firmly with all their four hands, the body rolled up into a ball, and the head hidden among the legs, thus gaining the popular name 'lazy monkey.' Their fur is rich and soft. Their motions are slow, and they advance stealthily and noiselessly on the insects and birds on which they prey. They feed partly on fruits and other vegetable food; in confinement, they readily eat rice and milk, and are very fond of eggs.

LORIS-MEL'IKOFF. See MELIKOFF.

LORNE, *lawrn*, Sir JOHN GEORGE EDWARD HENRY DOUGLAS SUTHERLAND CAMPBELL, Courtesy Marquis of: b. London, 1845, Aug. 6; eldest son of the Duke of Argyll. In 1868, he was a member of parliament. In 1871, he married Louise, fourth daughter of Queen Victoria. He was appointed gov.gen. of Canada 1878, and held that office till 1883. He is author of *A Trip to the Tropics* (1867); *Guido and Lita* (1875); *The U. S. A. After the War* (1885); *Imperial Federation* (1885); *Memories of Canada and Scotland* (1884); *Canadian Pictures* (1885); *Life of Palmerston; Tales and Poems; Psalms in English Verse; Windsor Castle; Life and Times of Queen Victoria* (1901); *A Gift Book for the Home;* etc.

LORRAINE, *lawr-rān'*, or LOTHRINGEN, *lŏt'rĭng-ėn*, or LOTHARIN'GIA: originally a portion of the German empire. Its history dates from 855, when Lotharius II. obtained (see CARLOVINGIANS) the lands between the Scheldt, Rhine, Meuse, and Saône, called the Kingdom of Lotharius (*Lotharii Regnum*), or Lotharingia, or Lorraine. The district now known as Rhenish Prussia was separated from Lorraine in the 10th c., and the remainder was divided 1044 into two duchies, *Upper* and *Lower* Lorraine. Lower Lorraine, after many vicissitudes, came into the possession of Austria, and now forms one-half of the kingdom of Belgium, and the provinces of Brabant and Gelderland, in Holland. Upper Lorraine continued to be governed by its own dukes till 1730, when it was given to Stanislas, ex-king of Poland, and on his death, 1766, was united to France. It was afterward subdivided into the depts. of the Meuse, Moselle, Meurthe, and Vosges. The inhabitants are of German origin, but speak the French language, with the exception of the district lying between Metz and the Vosges, which is called *German Lorraine.* This tract with Alsace was ceded to Germany at the peace of 1871. See ALSACE-LORRAINE.

LORRAINE' GLASS [see CLAUDE LORRAINE]: tinted glass, supposed to give the coloring of Claude Lorraine's landscapes to objects viewed through it.—Opticians apply

the term to a glass plate peculiarly ground and coated with a polished black composition, and so mounted as to reflect a landscape which can then be depicted from the image in the glass.

LORRY, n. *lŏr'rĭ:* a four-wheeled wagon without sides, for the carriage of heavy or bulky goods; a coal-truck.

LORY, n. *lō'rĭ* [Hind. *luri*, a parrot], (*Lorius*): genus of birds of the parrot family (*Psittacidæ*), natives chiefly of s.e. Asia and the E. Archipelago. They have a dense soft plumage, exhibiting the most rich and mellow colors; the tail is rounded or graduated, generally not long; the bill is feebler than in many of the parrots, and the upper mandible much arched. They are very active and lively even in confinement, and are also of very gentle and affectionate disposition. Red, scarlet, crimson, and yellow are prevailing colors of their plumage; but the name lory is often extended to some Australian birds of the same family, in which much more of a green color appears, and which have a stronger bill and a much less gentle disposition. The true lories feed much on the softest and most juicy fruits; the Australian birds plunder maize-fields. Recent discoveries seem to show that, of one genus of lory, the birds with red plumage are the females of those with green.

LOS ANGELES, *lōs ăn'jĕh-lĕs*, Sp. *ân'ċhā-lās:* city, cap. of Los Angeles co., of Cal.; on the Los Angeles (formerly Porciúncula) river, and on the Southern Pacific, the Atchison, Topeka & Santa Fé, and other railroads; 482 m. s.s.e. of San Francisco. Its growth within the past few years has been remarkable, many families being attracted to it as a place of permanent residence on account of its climate and charming surroundings; and hundreds of invalids from the n. living there during the winter months. The ocean is 30 m. distant by river, and its port, Wilmington, where the steamers of the Pacific Coast Steamship Company touch regularly, is 22 m. s., and is reached by a branch railroad. It is situated in a fertile agricultural region, particularly adapted to the cultivation of grapes, oranges, and other fruits; there are also valuable veins of silver and other minerals in the vicinity. The city is beautifully laid out, and has a dozen public parks beside Griffith Park, which lies slightly outside the city limits. It has excellent street railroad facilities, and was the first city in the country to use electricity for all street lighting. It carries on a large interior trade, and through its port has mercantile intercourse with foreign nations. It has numerous manufacturing industries, employing over 8,000 people; they include car, railroad construction, and electrical construction shops, wine-making establishments, foundries, planing-mills, and canning factories. The manufacturing industry has been greatly stimulated by the supply of petroleum fuel at a low price and by the bringing of

electricity from the mountain streams a distance of nearly 100 m. The United States census gave the value of manufactures in Los Angeles for the year ended 1900, June 19, at $21,297,727, since which time it has vastly increased.

The banks of Los Angeles are noted throughout the country for their generally solid and prosperous condition, with deposits aggregating nearly $50,000,000. The clearings of the Los Angeles banks for the year 1907 amounted to $623,170,919. The annual municipal expenditures are about $1,355,000; the chief items of expense are: for schools, about $446,000; for the police department about $130,000; for the street cleaning, $90,000; for the fire department, $126,000; for municipal lighting, $44,000; for parks, $56,000.

The principal harbor of Los Angeles is at San Pedro, where for several years the government has been engaged in constructing a great breakwater that will cost over $3,000,000, and which will permit the entrance to the harbor of deep-sea vessels, when Los Angeles expects to make a bid for trans-Pacific trade. The city is the seat of the University of Southern California, opened in 1880 by the Methodist Episcopals; a State Normal School; Saint Vincent's College, opened in 1865 by the Roman Catholics; Occidental College, opened in 1887 by the Presbyterians; three academies under the Roman Catholics, a public high school, and public and parish schools. There is a public library of 65,000 volumes, the Blanchard Art Gallery, and extensive botanical gardens. It has several hospitals, homes for the friendless, and orphanages. Some of its prominent buildings are a government building, the county court-house, the city-hall, cathedral, opera house. There are a number of buildings of historic interest, as General Fremont's headquarters, the Plaza Church, some of the adobe houses, homes of the first settlers. The mayor holds office for two years; he appoints five trustees for the library, and is ex-officio a member and chairman of several committees. The council has four commissioners who have charge of police, health, fire, and park departments. The board of education consists of nine members chosen by popular election, one from each ward.

Los Angeles was founded by 12 families of Indian, negro, and mixed blood, under the protection of the viceroy of Mexico 1781, Sep. 4. The patron in religion was Nuestra Señora la Reina de los Angeles, whence it receives its early name Pueblo de los Angeles. When the gold fever first broke out in California, Los Angeles was the largest, best built, and most important city in Alta California. For several years it alternated with Monterey as the capital of the province. During the Mexican war it was captured by General Stockton of the United States army, and later General Fremont's headquarters were located here. It was chartered as a city in 1851,

but its most rapid growth has been during the last 25 years. The adobe houses and nearly every trace of the early Spanish occupation have disappeared, and Los Angeles has become a typical modern city and prosperous metropolis. Pop. (1910) 319,198.

LOSE, v. *lôz* [AS. *lesan;* Goth. *fra-liusan;* Dut. *verliezen,* to lose]: to mislay; to lay or drop so as not to be able to find; not to gain or win; to be deprived of; to fail to obtain; to miss; to wander from; to bewilder; to waste, as time; to go from view or knowledge; to squander or throw away; to ruin or destroy; not to employ or enjoy; to suffer loss; in *OE.,* to decline; to fail. LO'SING, imp.; ADJ. causing or bringing loss: N. loss. LOST, pt. pp. *lŏst,* did lose: ADJ. laid or dropped so as not to be able to find or recover; gone from possession or view; not visible; mislaid; that cannot be found; unable to find; destroyed; perished; ruined; wasted; no longer possessing or existing; bewildered; perplexed; alienated; hardened. LOSER, n. *lô'zer,* one who is deprived of anything, as by defeat, etc.; one who fails to gain in a transaction. LO'SINGLY, ad. *-lĭ.* TO LOSE GROUND, to fall behind; to suffer gradual loss. TO LOSE HEART, to become timid or discouraged. TO LOSE ONE'S SELF, to become bewildered; to miss or be ignorant of one's way.

LOS HERRE'ROS. See BRETON DE LOS HERREROS.

LOSS, n. *lŏs* [from LOSE, which see]: deprivation; destruction; injury; defeat; failure; waste; leakage; that which is lost. AT A LOSS, puzzled; perplexed. TO BEAR A LOSS, to make it good; to endure with resignation.—SYN. of 'loss': detriment; privation; miss; forfeiture; damage; disadvantage.

LOSSING, *law'sing,* BENSON JOHN, LL.D.: author: b. Beekman, Dutchess co., N. Y., 1813, Feb. 12; d. near Dover Plains, N. J., 1891, June 3. He was apprenticed to the watchmaker's trade when a boy, entered journalism in Poughkeepsie, learned wood engraving, and became editor and illustrator of the *Family Magazine* 1838. Soon afterward he established himself as an engraver on wood in New York. In 1848 he began work on his *Pictorial Field-Book of the Revolution,* and till his death was very active in historical writing. He received the degree LL.D. from Mich. Univ. 1873. His publications include *Pictorial Field-Book of the Revolution; The Hudson, from the Wilderness to the Sea* (1866); *Pictorial Field-Book of the Civil War in the United States,* 3 vols. (1866-69); *Pictorial Field-Book of the War of 1812* (1868); *Our Country* (1873); *The American Centenary* (1876); *Cyclopœdia of United States History* (1881); *History of New York City* (1884); *Mary and Martha Washington* (1866); *Two Spies: Nathan Hale and John André* (1886); *The Empire State, a Compendious History of the Commonwealth of New York* (1887); and contributions to *Our Great Continent* (1890).

He also published *Lives of the Presidents of the United States* (1847); *Lives of the Signers of the Declaration of Independence* (1848); *Biographies of Eminent Americans* (1855); and numerous separate lives, memoirs, and histories.

LOSSINI, *lŏs-sē'nē* (Ger. *Lussin*): island in the Gulf of Quarnero, Adriatic Sea; length, 21 m.; breadth, 1 to 3 m. The principal place on the island is Lossini Piccolo, or Little Lossini, with 7,700 inhabitants, a fine harbor, and an active trade.

LOSS OF SPEECH. See APHASIA.

LOST. See under LOSE.

LOST PLEIAD, *plē'ăd:* a star of the Pleiades constellation which tradition says was once visible, being the seventh of that cluster. Only six stars are now to be seen with the naked eye. Probably the origin of the story is less astronomical than mythological. The legend figures in poetry and in art, a poem by Letitia Landon and a painting by Thomas Buchanan Read each bearing the title.

LOST PROPERTY: strays and waifs excepted, may be retained by the finder with impunity, after proper means have been taken to advertise it; and if it cannot be conveniently preserved without hazard he may dispose of it if not claimed. If, however, the loser can identify his property he has a right to restitution, and a third party purchasing lost property from the finder must restore it to the owner, if called upon, and may proceed against the seller for satisfaction. The owner of lost movables must not only prove that they once belonged to him, but that he lost possession either by the fraud of some other party, or in such a way that the ownership still remained with him. The finder's 'special property' in his find makes his title good against all save the real owner; the most striking exception is in the case of treasure-trove, that is, hidden valuables, of which, in England, a share goes to the crown, to which notice of such finding must be made. In the United States the law is less clear as to treasure-trove; but it is distinguished from other found property in that the finder has not so good a title as the owner of land in which valuables are found, whereas the finder's title to property found in dwellings, and especially in stores and other semi-public places, is better than that of the owner of the premises. A derelict is distinguished from lost property in that it passes from possession of the owner with his knowledge and consent. Lost property at sea is governed by peculiar principles. The limitation is one year, within which time the possessor may recover property upon the payment of expenses of the finder and of the remarkably heavy percentage of its value called salvage. There are certain cases in which a jury will construe the retention of lost property into larceny. If the finder

knows the owner, or can readily discover him, the taking with the intent to keep will amount to larceny. But the more common ground for action in America is detinue, that is, the unlawful retention of property. Obviously there is no recourse if the property detained be of such a character that it cannot be identified.

LOST RIVER: a short stream in the northwestern part of West Virginia, which disappears from view in one part of its course. It passes for some distance along underground channels but reappears again.

LOST TRIBES of Israel. See Babylonian Captivity; Jews, Lost Tribes of.

LOT, n. *lŏt* [AS. *hlot;* Goth. *hlauts,* lot: Dut. *lot,* a lot; *loten,* to cast lots: Icel. *hlutr,* lot, *hluti,* portion, *hljóta,* to obtain by lot]: that which falls to any one as his fortune; fate; fortune; chance; anything used in determining chances, as to cast or draw lots; a parcel; a piece or division of land; *familiarly,* collection, as, they are a *sorry lot;* abundance, as, we have a *lot of money:* V. to sort in lots; to catalogue. Lot'ting, imp. Lot'ted, pp. To cast lots, to use or throw a die, or to employ other means of so called chance, in order to determine an event; a prevalent custom among all nations of the ancient world—among the heathen with no reference higher than a supposed luck or chance; among the Hebrews with a reference, theoretic at least, to the decision by God; in the choice of one of the apostles, accompanied with prayer for God's direction of the result (Acts i. 23-26). To draw lots, to determine a matter by drawing one from two or more things, marked with symbols agreed upon, but which are concealed from the drawer while he is drawing. To pay scot and lot [AS. *scot,* payment]: to pay taxes according to share or proportion.—Syn. of 'lot, n.': destiny; doom; hazard; accident; quantity; portion.

LOT, *lŏt* (ancient *Oltis*): river of France, one of the largest tributaries of the Garonne, rising at Mount Lozère, in the Cevennes, flowing generally w. through the depts. of Lozère, Aveyron, Lot, and Lot-et-Garonne, joining the Garonne at Aiguillon, after a course of 270 m. It is navigable for about 170 m. with the help of locks.

LOT, *lŏt:* department in s. France, formed out of the province of Guienne, and comprising the arrondissements of Cahors, Gourdon, and Figeac; watered by the Dordogne, and the Lot, with its tributary, the Sellé; 2,005 sq.m. A range of hills, broad, but not high, and containing some iron, runs through the centre of the dept. from e. to w. in a semi-circle. The valleys yield corn, hemp, tobacco, and fruits, and the hillsides are clothed with vines. Flax-mills are numerous. Cap. Cahors.—Pop. 226,720.

LOT: nephew of the patriarch Abraham, and son of Haran: see Gen. xi.-xix. Lot is the type of a class of

well-meaning but morally weak men, seeking selfish advantage through compromises with evil which brought him almost to destruction in the awful catastrophe of the wicked cities of the plain.

LOTE, n. *lōt*, or LOTUS, n. *lō'tŭs* [Gr. *lotos;* L. *lotus;* It. *loto*, lotus]: genus of leguminous creeping plants, found in different countries, and of several species, ord. *Leguminōsæ*, sub-ord. *Papiliōnācĕæ;* an Egyptian water-plant—considered sacred by the Egyptians; a small tree: the true *lotus* or *lote-bush* of the classics is *Ziz'yphus lōtus*, ord. *Rhamnācĕæ*. See LOTUS.

LOT-ET-GARONNE, *lŏt-ā-gâ-rŏn':* department in the s.w. of France, formed out of the province of Guienne, and comprising the arrondissements of Agen, Villeneuve, Marmande, and Nérac; watered principally by the Garonne and the Lot; 2,060 sq.m. Among the people are a considerable number of French Protestants. The department is level, except in the s., where spurs of the Pyrenees make their appearance, and extremely fertile in the basins of the large rivers; but the e. is chiefly barren wastes, and the s.w. is largely a region of sandy and marshy tracts termed *Landes* (q.v.). The principal products are corn, wine, excellent hemp, fruits (of which the *prunes d'entes* of Agen are particularly celebrated), tobacco (considered the best manufactured in France), anise, and coriander. Pine, cork, and chestnut woods are numerous; domestic animals, especially poultry, are reared in great numbers for exportation. The chief metal is iron, and the dept. has ten ironworks, besides various manufactories. Pop. (1901) 278,740.

LOTH, a. *lōth:* an OE. spelling of LOATH. See LOATHE.

LOTHAIR I.: Roman emperor, eldest son of Louis-le-Debonnaire: b. about 795; d. Prüm, Prussia, 855, Sep. 29. He became associated with his father in the government of the empire in 817 and was crowned and named King of the Lombards in 820. On his father's death Louis and Charles, his brothers, joined their forces and defeated him at Fontenay in 841, June. In 843 the three brothers concluded the noted treaty of Verdun, by which Lothair retained the title of emperor, with Italy, and some French provinces beyond the Rhine and the Rhone. Charles then became king of France, and Louis received a tract of country bordering on the Rhine.

LOTHAIR II.: called THE SAXON, Roman emperor: b. about 1060; d. near Trent 1137, Dec. 4. He became duke of Saxony in 1106 and was elected king of Germany in 1125 and crowned by Pope Innocent II. in 1133.

LOTHARIN'GIA. See LORRAINE.

LO'THIANS. See SCOTLAND.

LOTHROP, HARRIET MULFORD STONE, 'MARGARET SIDNEY': American writer for young people: b. New Haven, Conn., 1844, Oct. 4. She was married to the Boston pub-

lisher, D. Lothrop, in 1881, and was founder and president of the National Society of the Children of the American Revolution. Among her numerous publications, mainly for young people, may be cited: *The Five Little Peppers* series (1882-1903); *So As by Fire* (1881); *The Pettibone Name* (1883); *The Golden West* (1885); *The Minute-Man* (1886); *Dilly and the Captain* (1887); *Little Maid of Concord Town* (1898); *The Judge's Cave: a Romance of the Days of Regicides;* etc.

LO'THROP, THOMAS: d. 1675, Sep. 29; b. England: soldier. He was a freeman in Salem, Mass., 1634; member of the general court 1647,53, and 64; removed to Beverly and aided in establishing a church there; represented the town in the general court four years; became capt. of militia at the beginning of King Philip's war; fought a battle with the Indians near Hadley 1675, Aug.; and Sep. 29 was surprised by the Indians at Bloody Brook near Deerfield, and with all but eight of his men massacred. In 1838 a memorial monument was erected over the remains of Lothrop and his 89 companions.

LOTION, n. *lō'shŭn* [F. *lotion*—from L. *lotĭōnem,* a washing]: medicated solution or watery mixture for external use; a medicinal wash. Lotions are liquid, but not oily, and are applied to circumscribed portions of the surface of the body. Among common lotions are the *muriate of ammonia wash,* solution of sal ammoniac in water or in vinegar with or without the addition of spirit; much used in contusions, where there is no wound of the skin, in chronic tumors, in enlarged joints, etc. *Chloride of soda wash,* solution of chlorinated soda diluted with 10 to 20 times its volume of water; useful as a gargle in ulceration of the mouth and throat, and as a wash for foul ulcers generally. *Chloride of lime wash,* one or two drachms (or more) of chloride of lime in a pint of water, used for the same purposes as the preceding wash. *Black wash,* prepared by adding calomel to lime-water (usually a drachm of the former to a pint of the latter) extensively used on venereal sores, and of service in many forms of intractable ulcers.

LOTO, n. *lō'tō* [F. *loto*—from It. *lotto,* a lot, a lottery: comp. It. *loto,* the Egyptian water-lily]: arithmetical game played with 24 numbered cards, wooden disks with corresponding numbers, and counters.

LOTOPHAGI, *lō-tŏf'a-jī* [Gr. *lotos,* lotus; *phago,* I eat]: lotus-eaters; name applied by the ancients to a peaceful and hospitable people inhabiting a district of Cyrenaica, on the n. coast of Africa, and much depending for their subsistence on the fruit of the lotus-tree, from which they also made wine. According to Homer, they received Ulysses hospitably, when, in his wanderings, he visited them, though on his companions, the sweetness of the lotus-fruit exercised such an influence, that they

forgot their native country, and had no desire to return home. This happy languor has been expressed with marvellous felicity by Tennyson in his poem on the Lotus-eaters.

LOTTERY, n. *lŏt'tėr-ĭ* [Eng. *lot*, chance: It. *lotteria*, a lottery: comp. F. *loterie*—from *lot*, a portion: Sp. *loteria*, a lottery]: distribution of money or goods by chance or lot; the name of the distribution; a card game; in *OE.*, allotment. Usually a lottery, as a distribution in which prizes are drawn by lot, comprises a specified quantity of tickets, each numbered, every ticket-holder having a right to draw from a box a prize or blank, as the case may happen to be, and thus gain or lose. Lotteries are, of course, arranged for the sake of profit to their proprietors; for the aggregate sum expended in prizes always falls short of the aggregate purchase-money for tickets. Whatever be the actual form of the lottery, it is indisputably a gambling transaction, the risks and losses of which are now acknowledged to be demoralizing. Lotteries are said to have been employed first by the Genoese government as a means of adding to the revenue of the country, and the bad example was soon followed by governments of other nations. The first lottery in England appears to have been in 1569, and the profits went to the repair of harbors and other public works. The same means was frequently afterward resorted to for additions to the revenue, or for particular objects, under control or by sanction of the government, the mode of conducting the lottery, and the conditions, being from time to time varied. In the early years of the present century, the state lottery, as it was usually called, was one of the regular institutions in Britain. Usually, the number of tickets in a lottery was 20,000, at a value of £10 each in prizes. At this valuation they were offered to the competition of contractors, and ordinarily assigned at an advance of £5 or £6 per ticket The contracting party sold them to the public at a further advance of £4 to £5 per ticket; thus the value was about doubled. The contractor devised the scheme of prizes and blanks—there being always a few prizes of large amount, to tempt purchasers. To accommodate persons with moderate means, certain tickets were divided into halves, and others into quarters, eighths, or sixteenths. The dexterity of the contractors consisted in drawing up 'schemes,' which in all varieties of placards and handbills were issued in profusion through the means of agents all over the country. The drawing took place on a specified day or days in a public hall in London, before certain commissioners, and was in this wise. Two machines, called 'wheels,' were appropriated, one for the numbers, and the other for the prizes and blanks. On a number being drawn, its fate was determined by the billet which next afterward came out. Two boys were the operators, one at each wheel. On the grounds of

injury to public morals, lotteries were altogether abolisher by act of parliament 1826; though a special statute legalized 'art-unions'—which are only lotteries under a specious form—for their supposed good effects in encouraging art. In France, the abolition of lotteries took place 1836, and in Hesse-Darmstadt 1852. The other German states continued the use of them; and 1841, Prussia derived from them a revenue of more than 900,000 thalers, Austria of 3,600,000 florins. In the kingdom of Italy lotteries still exist. Few worse ways of supplying the exchequer of a country have been imagined; and the only excuse urged is, that the gambling spirit exists, and will find some means of gratification, even if lotteries were abolished. It was found, however, in France that the abolition of lotteries was immediately followed by an increase of savings-bank deposits; and it has been everywhere observed, that the purchasers of lottery tickets have been to a great extent persons to whom economy and prudence are most necessary to the comfort of families and the general welfare of the state.

In the United States, from an early date lotteries were chartered for various public, charitable, and religious objects, such as hospitals, colleges, and sometimes churches. The congress, 1776, instituted a national lottery with the warm advocacy of Jefferson and other statesmen. Between 1776 and 1820, not less than 70 acts of congress authorized lotteries for various objects. An average of 85 per cent. of subscriptions was returned in prizes. As early as 1699, the ministers of the churches in Boston joined in public denunciation of them as a 'cheat' and as doing the work of 'pillagers of the people'; but this was declared puritanical and had little effect. Not till 1830 did opposition become positive and efficient. In 1832, the young men's association of Dr. Lyman Beecher's church in Boston, examined the whole subject of lotteries and denounced them as immoral and harmful to the state. This originated a movement which in a few years spread through New England. Job R. Tyson, Philadelphia, published a vigorous attack on them 1833; and Pennsylvania moved for their abolition by law, followed by Maryland 1836. They are now under legal prohibition. Where they are not especially authorized (and in some states the constitution expressly forbids the legislature to authorize them), the parties concerned in them are, in nearly all the states, subject to the imposition of heavy penalties. There exist in the state reports many cases where the provisions of state statutes concerning lotteries have been construed by the courts, but these decisions are necessarily of a particular character, and no important general principles can be derived from them. In Tennessee and Virginia, the acts abolishing lotteries have been by express decisions pronounced constitutional. In Massachusetts, a clause in such an act authorizing a search for tickets provided

for the purpose of drawing a lottery is not held to be inconsistent with that article of the bill of rights which declares that every subject has a right to be secure from all unreasonable searches and seizures of his house or person. In New York and Pennsylvania lotteries are declared to be public nuisances, and they may therefore be indicted as such. The schemes known as art-unions are held to be lotteries by express decisions. In the language of the court in New York: 'These associations distribute a small number of prizes among a great number of persons. The prizes and blanks are drawn in the same manner as in other lotteries. The intention of these schemes is to sell works of art for more than they can be sold for at private sale, and this is to be brought about by an appeal to the universal passion for playing at games of chance. They have all the attributes and elements of lotteries.'

The sums annually employed by Americans in lottery speculations probably amounted to hundreds of thousands. The last lottery supported by governmental encouragement was the Louisiana State Lottery. An act of congress passed in 1890 attempted to crush it by forbidding it the use of the United States mails, which act compelled its removal to Honduras.

LOT'TO: a game having its origin in Italy but now played occasionally in other countries. It is played on boards, divided into 27 small squares, arranged in three horizontal rows; five squares in each row are marked with numbers between 1 and 90, four of the squares being left blank. Each person playing is provided with a board upon which he covers the space marked with the particular number called out by the dealer, who draws the counters from a bag. The player who first covers all the five numbers on any horizontal row is declared the winner.

LOTUS, *lō'tŭs* [see LOTE]: name given by the Greeks to a number of different plants whose fruit was used for food. One of the most notable of these is the *Zizyphus Lotus,* native of n. Africa and s. Europe, belonging to the nat. ord. *Rhamnaceæ.* (See JUJUBE.) It is a shrub two or three ft. high, and its fruit, produced in great abundance, is a drupe of the size of a wild plum, with an almost globose kernel. This fruit is somewhat farinaceous, and has a pleasant, sweetish, mucilaginous taste. It is called by the Arabs *Nabk* or *Nabka;* and has, from earliest times, served as food to the inhabitants of n. Africa, where it is still a principal part of the food of the poor. Probably it was on this fruit that Homer's *Lotophagi* (q.v.) lived.—The fruit of the *Diospyrus Lotus,* or Date Plum, was sometimes called the Lotus. (See DATE PLUM.)—The name Lotus was given also to several beautiful species of Water-lily (q.v.), especially to the BLUE WATER-LILY (*Nymphæa cærulea*) and the EGYPTIAN WATER-LILY (*N. lotus*), and to the NELUMBO (q.v.) (*Nelumbium speciosum*), which grow in stagnant

and slowly running water in s. Asia and n. Africa. The *Nymphæa lotus* was called by the Egyptians *Shnin* or *Seshin*, and is called by the Arabs *Beshnin*, the Coptic name with the masculine article. It grows in the Nile and adjacent rivulets, and has a large white flower. The root is eaten by the people who live near the lake Menzaleh. The rivulets near Damietta abound with this flower, which rises two ft. above the water. It was the rose of ancient Egypt, the favorite flower of the country, and is often seen made into wreaths or garlands, placed on the foreheads of women, or held in their hands, and smelled for its fragrance. It frequently appears in the hieroglyphs, where it represents the Upper Country or s. Egypt, and entered largely into works of art—capitals of columns, prows of boats, heads of staves, and other objects being fashioned in its shape. In the mythology, it was the special emblem of *Nefer Atum*, son of Ptah and Bast; the god Harpocrates is seated upon it; and there was a mystical Lotus of the sun. In the mythology of the Hindus and Chinese, the Lotus plays a distinguished part. It is the Nelumbo. The Hindu deities of the different sects are often represented seated on a throne of its shape, or on the expanded flower. The color in s. India is white or red, the last color fabled to be derived from the blood of Siva, when Kamadeva, or Cupid, wounded him with the love-arrow. Lakshmî, also, was called the 'lotus-born,' from having ascended from the ocean on its flower. It symbolized the world; the *Meru*, or residence of the gods; and female beauty. Among the Chinese, the Lotus had a similar poetic meaning, being especially connected with Fuh, or Buddha, and symbolizing female beauty, the small feet of their women being called *kin leën*, or 'golden lilies.'

LOTZE, *lŏt'sĕh*, Rudolph Hermann: one of the most eminent philosophers of this century: 1817, May 21—1881, July 1; b. Bautzen, Saxony. He studied at the gymnasium of Zittau, and graduated in medicine and philosophy at the Univ. of Leipzig 1838, where he became 1839 adjunct prof. of philosophy. In 1844 he became prof. at Göttingen, where he spent nearly 40 years lecturing on philosophy. In his lectures and in works on various departments of knowledge, Lotze slowly matured his system, which in later years he gave to the world in his great work, *Mikrokosmus* (3 vols. 1856-64; 3d ed. 1876-80). His earliest work, *Metaphysik* (Leipzig 1841), published when he was only 24 years of age, shows, however, the same philosophical principle. Lotze's position was opposed to the idealism of Hegel, the realism of Herbart, and the materialism which in his day had invaded many schools of thought. His characteristic view was, that we find everywhere the region of facts, the region of laws, and the region of standards of value and worth—three regions never separated in reality, but only in our thoughts. The world of facts is the

field in which, and the laws are the means by which, those higher standards of moral and æsthetic value are being realized; which union becomes intelligible only through our conception of a personal God who created the world of forms and of laws in His voluntary choice of them as the natural agents to bring to pass the high ends of His work.

In the last decade of his life, Lotze embodied his courses of lectures in *System der Philosophie,* of which two vols., *Logik* (1874, 2d ed. 1880), and *Metaphysik* (1879) appeared. The concluding vol. on practical philosophy, was precluded by his death. His life was quiet and uneventful; his studies were profound and all-embracing; his spirit was calm, candid, broad, serious, and above all things concerned with living realities. All things with him come from, and exist only in relation to the living spirit of God. Misunderstood, though greatly admired, in his time, Lotze may be expected to exert increasing influence over the philosophic thought of the day now upon us.

LOUBAT, *loo-bâ,* Joseph Florimond, Duc de: French author and philanthropist: b. New York 1831, Jan. 21. He was graduated from the University of Paris and has been a liberal giver to public institutions, among his benefactions of this character being a gift of $1,000,000 to Columbia University, including valuable books and MSS. He has likewise given much to the Roman Catholic Church, and in recognition of this fact received his title of Duc de Loubat from Pope Leo XIII. in 1893. He has written: *Narrative of the Mission to Russia in 1866 by G. V. Fox; Medallic History of the United States.*

LOUBET, *loo-bā,* Emile: French statesman: b. Marsanne (Drôme) 1838. He was graduated in law at Paris, in 1865 was admitted to the bar at Montélimar, attracted attention by his legal ability, became counsel for the Paris, Lyons, and Mediterranean railway, in 1869 was elected conseiller d'arrondissement, and 1870, Sep. 4, was chosen mayor of Montélimar. Elected in 1871 to the general council of the Drôme, of which he afterward (1885) became president, he was returned to the Chamber of Deputies for Montélimar in 1876, where he served with the republican left until 1885. In 1885 he entered the senate for the department of the Drôme, and from December 1887 until April 1888, when he retired with his colleagues of the ministry, filled with much credit the post of minister of public works in the Tirard cabinet. He was chairman of the finance committee of the senate in 1890, chairman of the customs committee in 1893; and in 1892, Feb. 29, was made premier by President Carnot. His cabinet, in which he held the portfolio of the interior, lasted until November of that year, when its retirement was caused by attacks on its supposed laxity in the prosecution of the Panama case. In 1896

he was chosen president of the senate. Upon the sudden death of President Faure 1899, Feb. 16, the National Assembly met in congress (Feb. 18) and elected Loubet president of the republic on the first ballot. His position in politics was that of a moderate republican, without the tendency to radical views sometimes ascribed to him. He was not only a skilful administrator, but a close student of economic questions. He was a protectionist, though not of the extreme type, and an advocate of economy in finance, having made an able speech on financial reform in 1895. His administration as president did much to strengthen the republicans, and the monarchist party almost entirely disappeared as a serious factor in national affairs. Among the events of his term were the trial of Captain Dreyfus at Rennes, the strike of the miners at Montceau and of the dock-workers at Marseilles, and the enforcement of the association's law, with the attendant disturbances. In 1906 he was succeeded in the presidency by Clément Armand Fallières (q.v.). See FRANCE, *History.*

LOUD, a. *loud* [Icel. *hliod,* sound: Ger. *laut,* sound; *laut,* loud]: having a strong sound; noisy; clamorous; turbulent; emphatic: AD. with loudness. LOUDLY, ad. *lowd'lĭ.* LOUD'NESS, n. *-nĕs,* a great noise or sound; clamor; uproar. LOUD PATTERNS, flashy and showy patterns—thus indicating an analogy between *sound* and *color.*—SYN. of 'loud': obstreperous; sonorous; boisterous; vociferous; blustering; vehement; tumultuous.

LOUDON, *low'don,* JOHN CLAUDIUS: botanist and horticulturist: 1783, Apr. 8—1843, Dec. 14; b. Camuslang, Lanarkshire, Scotland. In 1803 he published *Observations on Laying out Public Squares;* 1805, *Treatise on Hot-houses;* and afterward was author of a number of works on botany, mostly of popular character, which have contributed much to extend knowledge and taste in horticulture. Among these are *Encyclopædia of Gardening* (1822); and *of Agriculture* (1825); *Greenhouse Companion* (1825); the *Encyclopædia of Plants* (1829); and his great work, *Arboretum et Fruticetum Britannicum* (8 vols. 1838). He died at Bayswater. Loudon established four different magazines, which he edited simultaneously with his *Arboretum.*—His widow wrote a number of pleasing popular works, chiefly connected with botany and gardening.

LOUGH, n. *lŏk:* the Irish spelling of Scotch *loch;* a lake; an arm of the sea. See LOCH.

LOUGHEAD, *lō'hĕd,* FLORA HAINES: American novelist and journalist: b. Milwaukee, Wis., 1855, July 12. She was graduated from Lincoln University, and was married in 1875 to C. E. Appony, and in 1886 to John Loughead, a journalist. She has done much journalistic work in Chicago, Denver, and San Francisco, and is the author of *The Libraries of California* (1878); *The Man*

Who Was Guilty (1886); *Hand-book of Natural Science* (1886); *Quick Cooking* (1890); *The Abandoned Claim* (1890); *The Man from Nowhere* (1892); *Santos's Brother* (1892); *A Crown of Thorns* (1892); *The Black Curtain* (1897); *The San Franciscan;* and of several plays.

LOUIS, *lô'is* (Fr. *lô-ē*), called 'THE CHILD': king of Germany: b. 893; d. 911. He was the son of the Emperor Arnulphus, and succeeded him in 899. During his nominal kingship the government was mainly conducted by Archbishop Hatto of Mainz. At this time the empire was constantly ravaged by the Hungarians. He was the last prince in Germany of the Carlovingian race.

LOUIS I., surnamed LE DEBONNAIRE: Roman emperor: b. 778; d. near Mainz, Germany, 840, June 20. He was a son of Charlemagne, was early appointed by his father King of Aquitania, and in 813 was named joint-regent of France, of which, in the following year, he became sole sovereign, as well as Emperor of the West. In 817 he divided his dominions among his three sons, and thereby gave rise to disturbances and contests which lasted during the whole period of his reign. In 829, in consequence of the solicitations of his second wife, Judith of Bavaria, who had borne him a son, Charles the Bald, he made a new division of the empire. In 830 the brothers Lothair and Pepin combined against their father, took him prisoner, charged their stepmother with adultery, and shut her up in a monastery. The design of Lothair to make himself sole sovereign having been discovered, the diet of Nimeguen obliged him to submit at discretion. Strife continued for the rest of Louis's life. In 837 Louis made a new division in favor of Charles, who obtained Neustria in addition to Aquitania. Though not without good qualities Louis had neither the statesmanship nor decision necessary for ruling so large an empire. He was succeeded as emperor by Lothair, to whose protection he had recommended his favorite son Charles.

LOUIS II.: Roman emperor: b. about 822; d. Brescia 875, Aug. 13. He was the son of Lothair I., was made king of the Lombards in 844, and became emperor, in succession to his father, in 855.

LOUIS III.: Roman emperor: b. about 880; d. about 924. He was the son of Boson, king of Provence, and Ermengarde, daughter of the Emperor Louis II. He succeeded his father on the throne of Provence at the age of 10, and in 900 contested the imperial throne with Berengar I., who, having surprised him at Verona, deprived him of his sight.

LOUIS IV., surnamed the BAVARIAN: Roman emperor: b. 1286; d. near Munich 1347, Oct. 11. He was the son of Louis the Severe, Duke of Bavaria, and succeeded his father in the dukedom, and was elected emperor in

1314. Frederick le Bel of Austria was also chosen at Cologne by another party of electors, and a war between the rivals ensued. Frederick was taken prisoner and only gained his liberty by renouncing his claims. Pope John XXII. then, in 1322, issued his bull of deposition against Louis, and the latter, appealing to a general council, went to Italy, where he declared the deposition of John and set up Peter de Corbiere as pope, under the name of Nicholas V., by whom he was crowned at Rome. In 1328 the German electoral princes in a council at Rhense announced that the emperor's title to the German and imperial crown was derived from his election by them and required no further sanction from the pope, the validity of which proceeding was not recognized by the Papacy.

LOUIS I.: king of France. See LOUIS I., Roman emperor.

LOUIS II., surnamed LE BÈGUE (the Stammerer): king of France: b. 846; d. Compiègne, France, 879, Apr. 10. He was the son of Charles the Bald, was crowned King of Aquitania in 867, and succeeded his father on the throne of France in 877. He was obliged to deliver up Provence to Boson, by whom it was erected into a kingdom. His children, Louis and Carloman, divided the kingdom between themselves and a posthumous son, afterward known as Charles the Simple.

LOUIS III.: king of France: b. about 863; d. 822. He was the son of Louis II., and the brother of Carloman, with whom he divided the rule of the kingdom. He defeated Hugh the Bastard, son of Lothaire, marched against Boson, king of Provence, and successfully opposed the Normans at Saucourt, a battle recounted in the famous German poem, the *Ludwigslied*.

LOUIS IV., surnamed D'OUTREMER: king of France: b. 921; d. 954, Sep. He was the son of Charles the Simple and became king in 936, on the death of Rudolph of Burgundy. He invaded Normandy, but was defeated and taken prisoner in 944. He was set free the next year after being obliged to concede Normandy to Richard, son of Duke William, and Laon to Hugh, father of Hugh Capet.

LOUIS V., surnamed LE FAINÉANT (Do Nothing): king of France: b. 966; d. 987, May. He was the last French monarch of the Carlovingian dynasty. In spite of the name conferred upon him he was an active ruler. He succeeded his father Lothaire in 986, and soon after becoming king took the city of Rheims and was preparing to march to the assistance of the Count of Barcelona, hard pressed by the Saracens, when he is said to have been poisoned by his queen.

LOUIS VI., surnamed LE GROS (the Fat): king of France: b. about 1078; d. 1137, Aug. 1. He was the son of Philip I., with whom he was associated in the

government in 1100, and whom he succeeded in 1108. His reign was greatly disturbed by contests with the Normans, and by feuds among his vassals. He quarreled with Henry I. of England, and thus was begun the struggle between the English and the French, which continued three centuries. He was ably counseled by his minister, Abbé Suger. Consult: Luchaire, *Louis VI. le Gros* (1889).

LOUIS VII., called Le Jeune: king of France: b. about 1120; d. 1180, Sep. 18. He was the son of Louis VI., and succeeded him in 1137. He contested with Pope Innocent II. the right of presentation to benefices, and was excommunicated by Innocent and his kingdom placed under interdict. By the persuasions of St. Bernard, Louis embarked on the Second Crusade, but was defeated by Saladin, and while returning to Europe, was captured at sea by the Greeks, but afterward rescued by Roger, king of Sicily. His divorced queen, Eleanor of Aquitaine, married Henry of Normandy, afterward Henry II. of England, bringing with her as dowry the provinces of Poitou and Guienne. This caused a long war between England and France. Consult: Luchaire, *Etudes sur les Actes de Louis VII.* (1855); Hirsch, *Studien zur Geschichte König Ludwigs VII. von Frankreich* (1892).

LOUIS VIII., surnamed The Lion: king of France: b. 1187; d. Montpensier, Auvergne, France, 1226, Nov. 8. He was the son of Philip Augustus of France and married Blanche of Castile in 1200. Accepting the offer of the English crown made him by the English barons in 1216 he landed in England, took Rochester and Winchester and received the homage of the barons at London. On the death of John he was excommunicated by the legate and withdrew to France in 1217, Sep. He succeeded his father in 1223, and soon regained most of the English possessions in France. In 1226 he led a crusade against Raymond, Count of Toulouse, and the Albigenses; took Avignon after a three months' siege, and laid waste Languedoc. Consult: Petit Dulaillis, *Etude sur la Vie et la Regne de Louis VIII.* (1894).

LOUIS IX., or Saint Louis: King of France: 1215, Apr. 25—1270, Aug. 25 (reigned 1226-70); b. Poissy. He succeeded his father, Louis VIII. His mother, Blanche of Castile, a woman of great talent and sincere piety, was regent during his minority, and bestowed on him a strictly religious education, which materially influenced his character and policy. When Louis attained his majority, he became involved in a war with Henry III. of England, and defeated the English at Taillebourg, at Saintes, and at Blaye 1242. During a dangerous illness, he made a vow that, if he recovered, he would go in person as a Crusader; accordingly, having appointed his mother regent, he sailed, 1248, Aug., with 40,000 men to Cyprus, whence, in the following spring, he proceeded

to Egypt, thinking, by the conquest of that country, to open the way to Palestine. He took Damietta, but was afterward defeated and taken prisoner by the Mohammedans. A ransom of 100,000 marks of silver procured his release 1250, May 7, with the relics (6,000 men) of his army. He proceeded by sea to Acre, and remained in Palestine till the death of his mother (1252, Nov.) compelled his return to France. He then applied himself earnestly to the affairs of his kingdom, united certain provinces to the crown on the lapse of feudal rights or by treaty, and made many important changes, the general tendency of which was to increase the royal power. A code of laws was brought into use, known as the *Etablissements de St. Louis.* Louis embarked on a new Crusade, 1270, July 1, and proceeded to Tunis; but a pestilence breaking out in the French camp, carried off the greater part of the army and the king himself. At his death, his son, Philip III., was glad to make peace and return to France. Pope Boniface VIII. canonized Louis 1297: his day is Aug. 25 or 26. For an interesting picture of the religious side of Louis's character, consult Neander's *Kirchengeschichte.* Bohn, VII., 1416-48.

LOUIS X., surnamed LE HUTIN (the Quarreler): king of France: b. Paris 1289; d. Vincennes 1316, June 4. Through his mother he inherited the kingdom of Navarre in 1305, and in 1314 he succeeded Philip the Fair, his father, on the throne of France. His posthumous son, John I., survived but a few months, and Louis's brother then succeeded as Philip V.

LOUIS XI.: King of France: 1423, July 3—1483, Aug. 30 (reigned 1461-83); b. Bourges; eldest son of Charles VII. From his boyhood he was restless, cruel, tyrannical, and perfidious. He made unsuccessful attempts against his father's throne, was compelled to flee to Brabant, and sought the protection of his uncle, Philip the Good, Duke of Burgundy, with whom he remained till his father's death 1461, when he succeeded to the crown. The severe measures which he immediately adopted against the great vassals, led to a coalition against him, at the head of which were the great Houses of Burgundy and Bretagne. Louis owed his success more to his artful policy than to arms; and the war threatening to break out anew, he invited Charles the Bold, Duke of Burgundy, to a friendly conference at Péronne, 1468, Oct. His agents, meanwhile, had stirred up the people of Liége to revolt against the duke, upon the news of which occurrence, Charles made the king a prisoner, and treated him roughly. On the death of the Duke of Burgundy 1477, who left an only daughter, Louis claimed great part of his territories as male fiefs lapsed to the superior, and wished to marry the young duchess to his eldest son, a boy of seven years. On her marriage with the Archduke Maximilian, he took arms; but a peace was concluded at Arras, 1482, Dec. 25, by which the daughter of Maximilian was betrothed to

the dauphin (afterward Charles VIII.), and the counties of Burgundy and Artois were transferred to France. Louis was also successful—after the use of means far from honorable—in annexing Provence to the crown as a lapsed fief. He greatly increased the power of the French monarchy. The latter years of his reign were spent in great misery, in excessive horror of death, which superstitious and ascetic practices failed to allay. It was calculated that he put about 4,000 persons to death in the course of his reign, mostly without form of trial. Yet he was a patron of learning, and is said to have been the author of *Les cent Nouvelles nouvelles*, a sort of imitation of the *Decameron*, and of the *Rosier des Guerres*, a book of instruction for his son. He also materially advanced the civilization of France by encouraging manufactures, commerce, and mining. He improved the public roads and canals, established several printing-presses, and founded three universities.

LOUIS XII., surnamed the FATHER OF HIS PEOPLE: King of France: b. Blois, France, 1462, June 27; d. 1515, Jan. 1. He was the son of Charles, Duke of Orleans, and on coming to the throne in 1498 he pardoned all who had wronged him previously. His reign was continually disturbed by war. He subdued the Milanese, Genoa, and Naples; but in 1513 the French were expelled from Italy. Henry VIII. of England, attacking Louis in his own dominion, Louis was obliged to sue for peace after the Battle of the Spurs in 1513, Aug. For his third wife he married the young Princess Mary, sister of Henry VIII., who after his death was married to her first lover, Charles Brandon, Duke of Suffolk. Louis XII. was honest and magnanimous; he was friendly to science, and France prospered under him. Consult: Lacroix, *Louis XII. et Anne de Bretagne* (1882); Claviere, *Histoire de Louis XII.* (1890 et seq.).

LOUIS XIII.: King of France: 1601, Sep. 27—1643, May 14 (reigned 1610-43); b. Fontainebleau; son of Henri IV. and Marie de' Medici. He succeeded to the throne on the death of his father, his mother becoming regent. She entered into close alliance with Spain, and betrothed the king to Anne of Austria, daughter of Philip III. of Spain, upon which the Huguenots, becoming apprehensive of danger, took up arms; but peace was concluded at St. Menehould, 1614, May 5; and the king, then declared of age, confirmed the Edict of Nantes, and called an assembly of the states, which was soon dismissed, because it began to look too closely into financial affairs. (See MARIE DE' MEDICI.) The suppression of Protestantism and liberty in Bearn led to the religious war, in which the Protestants lost almost all their places of security, and which ended 1622. After the death of De Luynes, 1624, Richelieu, afterward Cardinal and Duke, became chief minister of Louis. His powerful mind obtained complete control over the weak

king, and his policy effected that increase of monarchial power, at the expense of Protestants, nobles, and parliaments, which reached its consummation in the reign of Louis XIV. The overthrow of the Huguenots was completed by the capture of Rochelle, 1628, Oct. 20, at the siege of which the king took part in person. In 1631, his brother, the Duke of Orleans, having left the court, assembled a troop of Spaniards in the Netherlands, and entered France to compel the dismissal of Richelieu, whom he hated, and whom the king also secretly disliked; but the duke was completely defeated by Marshal Schomberg at Castelnaudary. Richelieu now led Louis to take part in the Thirty Years' War, openly supporting Gustavus Adolphus and the Dutch against the Spaniards and Austrians. The latter years of Louis's reign were signalized by the getting possession of Alsace and of Roussillon, acquisitions which were confirmed in the following reign.

LOUIS XIV., Le Grand: King of France: 1638, Sep. 16—1715, Sep. 1 (reigned 1643-1715); b. St. Germain-en-Laye, son of Louis XIII. and Anne of Austria. At his father's death his mother became regent, and Mazarin (q.v.) her minister. During the king's minority, the discontented nobles, encouraged by Spain, sought to shake off the authority of the crown, and the civil wars of the Fronde (q.v.) arose. Peace was concluded 1659; and in the following year Louis married the Infanta Maria Theresa, a princess possessing neither beauty nor other attractive qualities. Little was expected from the young king; his education had been neglected, and his conduct was dissolute; but on Mazarin's death, 1661, he suddenly assumed the reins of government, and from that time forth carried into effect with rare energy a political theory of pure despotism. His famous saying, '*L'état c'est moi*' (I am the state), expressed the principle to which everything was accommodated. He had a cool and clear head, with much dignity and amenity of manners, great activity, and indomitable perseverance. The distress caused by the religious wars had created throughout France a longing for repose, which was favorable to his assumption of absolute power. He was ably supported by his ministers. Manufactures began to flourish under the royal protection. The fine cloths of Louviers, Abbeville, and Sedan, the tapestries of the Gobelins, the carpets of La Savonnerie, and the silks of Tours and Lyon acquired wide celebrity. The wonderful talents of Colbert (q.v.) restored prosperity to the ruined finances of the country, and provided the means for war; while Louvois (q.v.) applied these names in raising and sending to the field armies more thoroughly equipped and disciplined than any other of that age.

On the death of Philip IV. of Spain, Louis, as his son-in-law, set up a claim to part of the Spanish Netherlands; and 1667, accompanied by Turenne (q.v.), he

crossed the frontier with a powerful army, took many places, and made himself master of that part of Flanders since known as French Flanders, and of the whole of Franche Comté. The triple alliance—between England, the States-general, and Sweden—arrested his career of conquest. The treaty of Aix-la-Chapelle (1668) forced him to surrender Franche Comté. He vowed revenge against the States-general, strengthened himself by German alliances, and purchased with money the friendship of Charles II. of England. He seized Lorraine 1670; and 1672, May, again entered the Netherlands with Condé and Turenne, conquered half the country in six weeks, and left the Duke of Luxembourg to lay it waste. The States-general formed an alliance with Spain and with the emperor, but Louis made himself master of 10 cities of the empire in Alsace; and in the spring of 1674, took the field with three great armies of which he commanded one in person, Condé another, and Turenne a third. Victory attended his arms; and notwithstanding the death of Turenne, and the retirement of the Prince of Condé from active service, he continued in subsequent years, with his brother, Duke of Orleans, to extend his conquests in the Netherlands. The Peace of Nimeguen 1678, left him in possession of many of his conquests. He now established Chambres de Réunion in Metz, Breisach, and Besançon, pretended courts of law, in which his own will was supreme, and which confiscated to him, as feudal superior in right of his conquests, territories which he wished to acquire, seignories belonging to the Elector Palatine, the Elector of Treves, and others. He also, 1681, Sep. 30, made a sudden and successful attack on Strasburg, a free German city, the possession and fortification of which added greatly to his power on the Rhine. The acquisition thus made, a treaty in 1684 confirmed to him.

Louis had now reached the zenith of his career. All Europe feared him; his own nation had been brought by tyranny, skilful management, and military glory, to regard him with Asiatic humility, admiring and obeying; all remnants of political independence had been swept away, no assemblies of the states or of the notables were held; the nobles had lost both the desire and the ability to assert political power; the municipal corporations no longer exercised any right of election, but received appointments of officials from the court; the provinces were governed by *intendants,* who were immediately responsible to the ministers, and they to the king, who was his own prime minister. Even the courts of justice yielded to the absolute sway of the monarch, who interfered at pleasure with the ordinary course of law, by the appointment of commissions, or withdrew offenders from the jurisdiction of the courts by *Lettres de Cachet* (q.v.), of which he issued about 9,000 in the course of his reign. He asserted a right to dispose at his pleasure of all prop-

erties within the boundaries of his realm, and took credit to himself for gracious moderation in exercising it sparingly. The court was the very heart of the political and national life of France, and there the utmost splendor was maintained; and a system of etiquette was established, which was a sort of perpetual worship of the king.

It was a serious thing for France and the world when Louis fell under the control of his mistress, the Marquise de Maintenon (q.v.), whom he married in a half-private manner 1685, and who was herself governed by the Jesuits. One of the first effects of this change was the adoption of severe measures against the Protestants. When it was reported to Louis that his troops had converted all the heretics, he revoked the Edict of Nantes 1685, and then ensued a bloody persecution; while more than half a million of the best and most industrious of the inhabitants of France fled, carrying their skill and industry to other lands. Yet Louis was not willing to yield too much power to the pope; and quarrelling with him concerning the revenues of vacant bishoprics, he convened a council of French clergy, which declared the papal power to extend only to matters of faith, and even in these to be dependent on the decrees of councils.

The elector of the Palatinate having died 1685, May, and left his sister Duchess of Orleans, heiress of his movable property, Louis claimed for her also all the allodial lands; and from this and other causes arose a new European war. A French army invaded the Palatinate, Baden, Würtemberg, and Treves, 1688. In 1689, the Lower Palatinate and neighboring regions were laid waste by fire and sword. This atrocious proceeding led to a new coalition against France. Success for a time attended the French arms, particularly in Savoy and at the battle of Steinkerk. Reverses, however, ensued; the war was waged for years on a great scale, and with various success; and after the French, under Luxembourg, had gained, 1693, the battle of Neerwinden, it was found that the means of waging war were very much exhausted, and Louis concluded the peace of Ryswick 1697, Sep. 20. The navy had been destroyed, the finances were grievously embarrassed, the people were suffering from want of food, and discontent was deep and general. Louis placed the Count D'Argenson at the head of the police, and established an unparalleled system of espionage for maintenance of his own despotism.

At the death of Charles II. of Spain, 1700, Nov. 1, it was found that Louis had obtained his signature to a will by which he left all his dominions to one of the grandsons of his sister, who had been Louis' queen. Louis supported to the utmost the claim of his grandson (Philip V.), while Emperor Leopold supported that of his son, afterward Emperor Charles VI. But the power of France was now weakened, and the war had to be

maintained on the side both of the Netherlands and of Italy. One bloody defeat followed another; Marlborough was victorious in the Low Countries, and Prince Eugene in Italy; while the forces of Louis were divided and weakened by the employment of large bodies of troops against the Camisards in the Cevennes, for the extinction of the last relics of Protestantism. Peace was concluded at Utrecht, 1713, Apr. 11; the French prince obtained the Spanish throne, but France sacrificed valuable colonies. A terrible fermentation now prevailed in France, and the country was almost ruined; but the monarch maintained to the last an unbending despotism. He died at Versailles after a short illness, in his 77th year, and was succeeded by his great-grandson, Louis XV. His son, the Dauphin, and his eldest grandson, Duke of Bretagne, both had died 1711. Louis had a number of natural children, and he had legitimized those of whom Madame de Montespan was the mother; but the parliament, which made no objection to recording the edict when required by him, made as little objection to annulling it when required by the next government. The 'works' of Louis XIV. (6 vols. Paris 1806), containing his Instructions for his sons, and many letters, afford important information as to his character and the history of his reign. The reign of Louis XIV. is regarded as the Augustan age of French literature. Among his sea commanders were Château-Renand, Duquesne, and Tourville; Vauban was his military engineer; Perault, Mansart and Blondel, architects; among his painters were Claude Lorraine, Poussin and Lebrun; among poets and writers of his reign were Corneille, Racine, Moliére; among his great preachers were Massillon, Bossuet and Flechier. Consult: Voltaire, *Siècle de Louis XIV.;* Hassall, *Louis XIV. and the Zenith of the French Monarchy* (1895); and Philippson, *Das Zeitalter Ludwigs des Vierzehnten* (1879).

LOUIS XV., King of France: 1710, Feb. 15—1774, May 10 (reigned 1715-74); b. Versailles; great-grandson of Louis XIV., whom he succeeded on the throne. The Duke of Orleans, as first prince of the blood, was regent during the minority of the king, whose education was intrusted to Marshal Villeroi and Cardinal Fleury. The country was brought to the verge of ruin during the regency, by the folly of the regent and the financial schemes of the celebrated Scotchman, Law (q.v.). When Louis was 15 years of age, he married Maria Lesczynski, daughter of Stanislas, dethroned king of Poland. Fleury was for a long time at the head of affairs, and by parsimony succeeded in improving the condition of the finances. It was his policy also to avoid war, in which however, Louis was involved 1733, in support of his father-in-law's claim to the throne of Poland; the result being that Louis obtained Lorraine for his father-in-law, and ultimately for France. Notwithstanding the vigor

with which this war was conducted, the character of Louis now became completely developed as one of the utmost sensuality, selfishness, and baseness. He surrounded himself with the vilest society, utterly forsook his queen, and lived, as he continued to do to the end of his life, in extreme debauchery. In 1740, the war of the Austrian Succession broke out, in which the French arms were not very successful, and during which Fleury died. The king was present, 1745, at the great victory of Fontenoy, and showed plenty of courage. The peace of Aix-la-Chapelle, 1748, was largely due to the entreaties of Madame de Pompadour, whose influence the Empress Elizabeth of Russia secured by bribes and flatteries. France gained nothing by this war; but her people were ruined, and her navy destroyed.

The king now sank completely under the control of Madame de Pompadour, who was both concubine and procuress, and to whom he gave notes on the treasury for enormous sums, amounting in all to hundreds of millions of livres. War broke out again with Britain concerning the boundaries of Acadia (Nova Scotia), and was for some time prosecuted with considerable vigor. In 1756, an extraordinary alliance was formed between France and Austria, contrary to the policy of ages, and chiefly through the influence of Madame de Pompadour; but as she disposed of the command of the French armies at her pleasure, success did not attend their operations. The state of the finances, the dispirited condition of the army, and the outcry of the distressed people, were not sufficient to induce the king to make peace; but governed by his mistress, he obstinately persevered in war, even after the terrible defeat of Minden 1759; while the British conquered almost all the French colonies both in the E. and W. Indies, with Cape Breton and Canada. A peace, most humiliating to France, was at last concluded 1763.

Louis, although indifferent to the ruin of his people, and to everything but his own vile pleasures, was reluctantly compelled to take part in the contest between Madame de Pompadour and the Jesuits, the result of which was the suppression of the order 1764. (See JESUITS.) The parliaments, emboldened by their success in this contest, now attempted to limit the power of the crown, by refusing to register edicts of taxation; but the king acted with unusual vigor, maintaining his own absolute and supreme authority, and treating the attempt of the parliaments to unite for one object as rebellious. The Duke of Choiseul was now displaced from office; a new mistress, Madame Du Barry, having now come into the place of Madame de Pompadour; and a ministry was formed under the Duke d'Aiguillon, every member of which was an enemy of the parliaments, and an object of popular detestation. The councilors of the parliament of Paris were removed from their offices, and

banished with great indignity; and an interim parliament was appointed (1771, Jan.), which duly obeyed the court. The princes of the blood protested against this arbitrary act, which deeply moved the popular indignation. The king, when told of the ruin of the country, and the misery and discontent of the people, only remarked that the monarchy would last as long as his life; and continued immersed in sensual pleasures and trifling amusements. His gifts to Madame Du Barry, notwithstanding the embarrassment of the finances, in five years amounted to 180 millions of livres. At last, Louis was seized with small-pox, and died, universally disliked and in extreme misery. He was succeeded by his grandson, Louis XVI.

LOUIS XVI., AUGUSTE, King of France: 1754, Aug. 23—1793, Jan. 21 (reigned 1774-93); b. Versailles; third son of the Dauphin, Louis, who was the only son of Louis XV. He was styled Duke de Berry, until, by the death of his father and his elder brothers, he became Dauphin. He had a vigorous frame, was fond of hunting and manly exercises, took great pleasure in mechanical labors, and showed aptitude for geometry, but none for political science. In the midst of the most corrupt of courts, he grew up temperate, honest, and moral. He was married 1770, May 10, to Marie Antoinette, youngest daughter of the Empress Maria Theresa of Austria.

When Louis ascended the throne, misery and discontent prevailed throughout France. He had not the vigor and judgment necessary for circumstances full of difficulty, and was conscious of his own weakness. He made Maurepas, an old courtier, his prime minister; but among his ministers were Malesherbes, Turgot, and other men of known patriotism; and his accession was signalized by the remission of some of the most odious taxes, the abolition of the last relics of serfdom, the abolition of the torture in judicial investigations, a reduction of the expenditure of the court, and the foundation of institutions for the benefit of the working-classes. He was, for a time, extremely popular; but deeper reforms were rendered impossible by the opposition of the privileged classes. In 1777, June, when the state of the finances seemed nearly desperate, Necker (q.v.) was called to the office of general director of them, and succeeded in bringing them to a more tolerable condition, without any very radical change; but from the interference of France in the American war of independence, Necker was obliged to propose the taxation of the privileged classes, hitherto exempted. Their resistance compelled him to resign; and Joly de Fleury succeeded him; but the general discontent induced the king, 1783, to appoint Calonne (q.v.) comptroller-general, who found money for a time by borrowing, much to the satisfaction of the courtiers. But the indignation of the people increased, and Calonne found it necessary to recommend the convening of an assembly

of the notables. Abp. Loménie de Brienne became finance minister 1787, May 1. He obtained from the notables some concessions and some new taxes. But the parliament of Paris refused to register the edict of taxation, as oppressive to the people; and the extravagance of the court and the queen began to be freely spoken of. The convening of the States-general now began to be demanded from every corner of France. The king registered the edicts in a *lit de justice*, and banished the councilors of parliament to Troyes; but ere long found it necessary to recall them, and experienced from them even a stronger opposition than before. 1788, May 8, he dissolved all the parliaments, and established a new kind of court (*Cour Plénière*) instead; but this act of despotism set the whole country in a flame. Matters became still worse, when, Aug. 16, appeared the famous edict, that the treasury should cease from all cash payments except to the troops. Brienne was compelled to resign, and Necker again became minister. An assembly of the states of the kingdom was resolved upon; and by the advice of Necker, who wished a counterpoise to the influence of the nobility, clergy, and court, the Third Estate was called in double number.

For the subsequent history of Louis, see FRANCE. All readers of history are familiar with the melancholy incidents of his life, from the opening of the assembly of the states (1789, May 5) till his tragic execution. At ten o'clock in the morning of 1793, Jan. 21, he died by the guillotine, in the Place de la Révolution. As the executioner bound him, Louis tore himself free, and exclaimed: 'Frenchmen, I die innocent; I pray that my blood come not upon France.' The rolling of drums drowned his voice. Ere the guillotine fell, the Abbé Edgeworth, his confessor, cheered him with the words: 'Son of St. Louis, ascend to heaven!' Consult, Bouvet, *Histoire de Louis XVI.* (1825); Jobez, *La France sous Louis XVI.* (1877-93); Beaucourt, *Captivité et derniers Moments de Louis XVI.* (1892); Courian, *Louis XVI. et la Révolution* (1893).

LOUIS XVII., CHARLES, titular King of France: 1785, Mar. 27—1795, June 8; b. Versailles; second son of Louis XVI. He received the title of Duke of Normandy till, on the death of his brother 1789, he became Dauphin. He was a promising boy. In the earlier days of the Revolution, he was sometimes dressed in the uniform of the National Guard, and decorated with the tricolor, to gratify the populace. After the beheading of his father, he was proclaimed king and was recognized as such by the governments of England and Russia; but he continued in prison—at first with his mother, afterward apart from her—in the Temple, under the charge of a coarse Jacobin shoemaker, named Simon, who treated him with cruelty, and led him into vicious excesses, so that he became a mere wreck both in mind

and body. After the overthrow of the Terrorists, he was—perhaps intentionally—forgotten, and died not long afterward.

LOUIS XVIII., STANISLAS XAVIER, King of France: 1755, Nov. 17—1824, Sep. 18 (succeeded to the title 1795; reigned 1814-24); b. Versailles; next younger brother of Louis XVI. He received the title Count de Provence. In 1771, he married Maria Josephine Louisa, daughter of Victor Amadeus III. of Sardinia. After the accession of Louis XVI. to the throne, he assumed the designation *Monsieur*, and became an opponent of every salutary measure of the government. He fled from Paris on the same night with the king, and was more fortunate, for, taking the road by Lille, he reached the Belgian frontier in safety. With his brother, the Count d'Artois, he now issued declarations against the revolutionary cause in France, which had a very unfavorable effect on the situation of the king. The two brothers for some time held a sort of court at Coblenz. Louis joined the body of 6,000 emigrants who accompanied the Prussians across the Rhine 1792, July, and issued a manifesto even more foolish and extravagant than that of the Duke of Brunswick. After the beheading of his brother, Louis XVI., he proclaimed his nephew king of France, as Louis XVII., and 1795 himself assumed the title of king. The events of subsequent years compelled him frequently to change his place of abode, removing from one country of Europe to another, till at last, 1807, he found refuge in England, and purchased a residence, Hartwell, in Buckinghamshire, where his wife died 1810, and where he remained till the fall of Napoleon opened the way for him to the French throne. He landed at Calais 1814, Apr. 26, and entered Paris, after 24 years' exile, May 3; and the nation received the constitutional charter from his hands June 4. See FRANCE.

The conduct of the government, however, was far from constitutional or liberal. The nobles and priests exercised an influence over the weak king, which led to severe treatment of the Imperialists, the Republicans, and the protestants. Then followed Napoleon's return from Elba, when the king and his family fled from Paris, remained at Ghent till after the battle of Waterloo, and, after the end of the 'Hundred Days,' returned to France under protection of the Duke of Wellington. He issued from Cambrai a proclamation in which he acknowledged his former errors, and promised general amnesty to all except traitors. Again, however, he followed in many things the counsels of the party which detested all the fruits of the Revolution. But the chamber of deputies, elected with many irregularities, was fanatically royalist, and the king, by advice of the Duke de Richelieu, dissolved it; whereupon arose royalist plots for his dethronement, and the abolition of the charter. Bands of assassins were collected by nobles and priests in the

provinces, who slew hundreds of adherents of the Revolution and of Protestants, and years elapsed ere peace and good order were in any measure restored.

LOUIS, *lô'ĭss*, F. *lô-ē'* (properly LUDWIG), THE GERMAN: abt. 805-876, Aug. 28 (reigned 843-876); third son of Louis le Débonnaire. By the treaty at Verdun, 843, Louis obtained Germany, and became the founder of a distinct German monarchy. He died at Frankfurt, and his kingdom was divided among his three sons: Carlmann obtaining Bavaria, Carinthia, and the tributary Slavonic countries; Louis obtaining Franconia, Thuringia, Saxony, and Friesland; Charles the Fat, Swabia, from the Main to the Alps. See CARLOVINGIANS.

LOU'IS, THE GREAT, King of Hungary. See HUNGARY.

LOUI'SA (LUISE AUGUSTE WILHELMINE AMALIE), Queen of Prussia. See LUISE.

LOUISBURG, *lô'ĭs-bĕrg:* town of Cape Breton Island, province of Nova Scotia, Canada; lat. 45° 54′ n., long. 59° 52′ w.; named in honor of Louis XIV. of France. After the cession of the French settlements in Nova Scotia to England pursuant to the terms of the treaty of Utrecht, 1713, French emigrants took possession of Cape Breton Island, and the French government began erecting fortifications there designed to be the strongest in America. Work was carried on 20 years, and $10,000,000 were expended on the fortress and its armament. A town was established on the s. side of a commodious land-locked harbor, which attained a pop. of 3,000. The station became very important to the naval and fishing interests of France in America, and in time threatened serious loss to the English and colonial fisheries. In 1745, while England and France were engaged in war, an expedition was sent from New England, devised by Gov. Shirley of Massachusetts, sanctioned by the legislature of Massachusetts, and commanded by William Pepperell, to attempt the capture of the place. Troops were conveyed in 100 vessels, made a landing Apr. 30, and besieged the town and fortress till June 17, when the French commander surrendered. Great as was the advantage of this capture to England, its possession was short-lived, as the treaty of Aix-la-Chapelle 1748, restored the place to France. The works were strengthened and a new battery erected at Point Rocheforte at a cost of $5,000,000. In 1758 a British force of 14,000 men, 20 ships of the line, and 18 frigates, under command of Gen. Amherst, made an attack on it, and after a spirited defense the walls were breached, the town destroyed, and the garrison forced to surrender July 26. Shortly after the capture the British government ordered that the great fortress be razed to the ground and today only the casements or bomb-proofs remain. The ruins are now being preserved and under the patron-

age of King Edward VII. a memorial tower is to be erected bearing the names of the killed and wounded in both sieges.

Louisburg is now becoming a port of considerable importance, having been established as the eastern terminal port of the Intercolonial railway and used by the Dominion Coal Company and by the Dominion Steel Company as a shipping port for a large portion of their products. Pop (1901) 1,588.

LOUIS D'OR, n. *lô'ē dōr* [F. a Louis of gold]: a gold coin introduced into France 1641, and continued till 1795. It was introduced in consequence of the prevalent custom of clipping and otherwise defacing the coins of the realm, from which malpractices it was thought to be in some measure secured by its border. The old coins were called in. The louis d'or ranged in value from about 16*s.* 7*d.* to 18*s.* 9¾*d.* sterling, or from about $4.03 to about $4.60. Some louis d'ors bear special names, chiefly derived from the figure exhibited on the obverse side.—In some parts of Germany, in the old coinage were gold pieces of five thalers, often popularly called *louis d'or,* and the name is also occasionally applied to the French *napoleon* or *20-franc piece.*

LOUISEVILLE, *lô'ēz-vĭl,* or RIVIÈRE DU LOUP, *rē-vē-ä dü lô:* Canadian town, capital of Maskinonge co., in the province of Quebec; on Lake Saint Peter, an expansion of the Saint Lawrence river, and on the Canadian Pacific railroad; about 18 m. w. of Three Rivers. The mineral springs of Saint Léon, in the vicinity, bring many people to Louiseville. The chief industry is tanning leather, but flour and dairy products are among the manufactures. Pop. 1,655.

LOUISIADE, *lô-ē-zē-âd,* ARCHIPELAGO: in the Coral Sea, s.e. of New Guinea; belongs, administratively, to British New Guinea. The largest islands of the group are Southeast (Sudest) Island, Saint Aignan, and Rossel. Southeast Island is about 45 m. long and from 4 to 10 m. wide. Rossel and Saint Aignan each have an area of over 100 sq.m. They are all mountainous. Saint Aignan has a peak about 3,500 ft. in height. Many of the small islands are of coral formation; and the vegetation is varied and luxuriant. The islands were discovered in 1666 by Torres, and became British possessions in 1888. The majority of the inhabitants are uncivilized, and are of the Papuan race.

LOUISIANA, *lô-ē-zē-â'na:* state; one of the United States of America; known colloquially as the 'Creole State.'

Location and Area.—Louisiana is in lat. 28° 56′—33° n., long. 89°—94° w.; bounded n. by Arkansas and Mississippi, e. by Mississippi and the Gulf of Mexico, s. by the Gulf of Mexico, w. by Texas; extreme length e. and w. 300 m., extreme breadth n. to s. 240 m.; 48,720 sq.m.

LOUISIANA
SCALE OF MILES
0 10 20 30 40 50 60
Area in Square Miles, 45,420. Population, 1,381,625.
Number of Counties, 58. Capital of State, Baton Rouge.
MISSISSIPPI
ALABAMA
GULF OF MEXICO
Shreveport
Monroe
Vicksburg
JACKSON
BATON ROUGE
Alexandria
Lafayette
Crowley
Lake Charles
Donaldsonville
New Iberia
Plaquemine
New Orleans
Natchez
Brookhaven
Hattiesburg
Mobile
Pascagoula
Gulfport
Biloxi
Pearl River
Bay St. Louis
Pontchartrain
Lake Borgne
Chandeleur Sound
CHANDELEUR IS.
ERROL IS.
BRETON I.
SHIP I.
HORN I.
PETIT BOIS I.
North Pass
North East Pass
South East Pass
South Pass
South West Pass
Longitude West from Greenwich
BORMAY ENGRAVING CO., N. Y.

(31,180,800 acres); coast line 1,256 m.; internal water communication 2,500 m.; cap. Baton Rouge.

Topography.—The surface in general is low and level, and slopes from low hills in the n. and n.w. to marshes in the delta of the Mississippi river below the river at high tide. High lands comprise 12,332,000 acres; level lands 13,773,000. A further subdivision gives good uplands 5,248,000 acres, pine hills 5,497,000, bluff lands 1,587,000, prairie region 2,483,000, arable alluvial lands 3,615,000, wooded alluvial 2,752,000, fine flats 1,585,000, coast marsh 3,338,000, inland water surface 1,228,000, and coast bays 1,100,000. Deducting the inland water, coast marsh, and coast bays surfaces, there are more than 22,000,000 acres of valuable land, all of which, excepting about 3,000,000 acres of rich prairie land, is covered with forests of choice timber, pine, cypress, gum, oaks of all kinds, bay, beech, poplar, hickory, ash, sycamore, locust, elm, willow, cottonwood, maple, mulberry, and other varieties. Louisiana is abundantly supplied with navigable waters. The Mississippi river traverses nearly 600 m. of it, and is navigable for the largest steamers; Red river crosses Louisiana diagonally from the n.w., and through the removal of obstructions by the federal government, has become an important commercial channel; Sabine river forms a part of the w. boundary of the state, and receives a number of small tributaries from the e.; Washita, Tensas, Bœuf, Dugdemona, and Bistineau rivers belong to the Red river system; Pearl, Bogue Chitto, Tangipahoa, Tickfaw, and Amite principally drain the country e. of the Mississippi river; and Atchafalaya River, Vermilion Bayou, Bayou Tèche, Bayou de Large, Bayou Lafourche, Grand river, and Bayou Terrebonne comprise the chief streams of the delta region. There are numerous lakes, and river expansions bearing the name of lakes, chief of which are Lake Pontchartrain, whose waters are salt and rise and fall with the tide from the Gulf of Mexico, Lake Maurepas, Lake Mermenteau, Sabine Lake, Calcasieu Lake, a series connected with Atchafalaya river, and another in the n. belonging to the Red river and its tributaries. Along the gulf coast are a number of bays and sounds, notably Bay Ronde, Garden Island Bay, East Bay, West Bay, Atchafalaya Bay, Timbalier, Terrebonne, Côte Blanche, and Vermilion Bays, and Chandeleur and Isle au Breton sounds. The country on both sides of some of the principal streams has to be protected against damage by overflow by a system of dikes, locally called levees. Spring freshets have frequently caused breaks in the levees and inundations of large tracts of country, one of the most noted being that of 1874, when 31 parishes were wholly or partly flooded and the federal government had to aid private philanthropy in saving thousands of inhabitants of Louisiana from starvation. Prior to 1875, nearly 2,000 m. of levees had been constructed

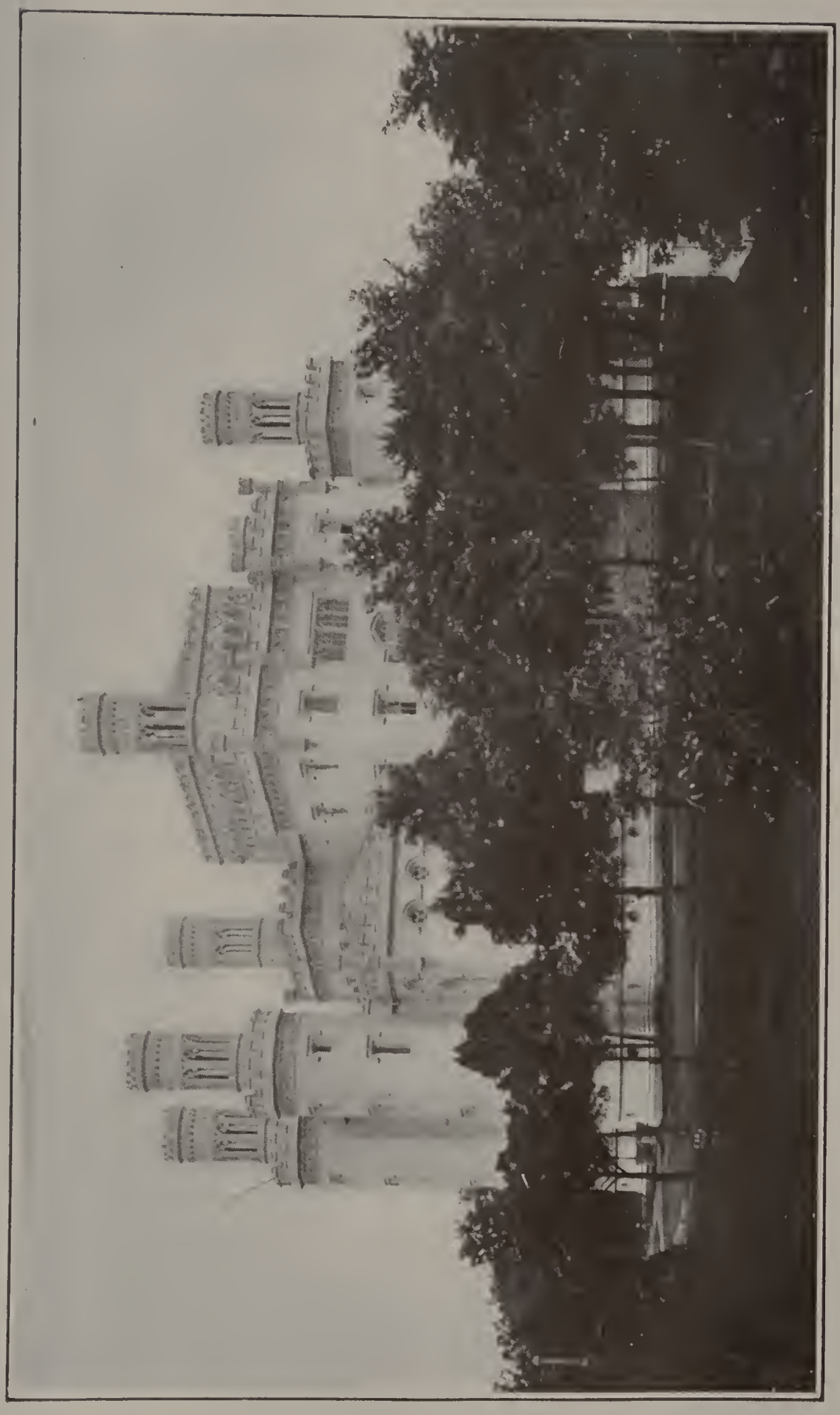
on the Mississippi, Red, Lafourche, Atchafalaya, Black, and Washita rivers, and on several bayous. The success of the jetties at the s. pass of the Mississippi river (see DIKE; EADS, JAMES BUCHANAN) has greatly diminished the danger of future inundations, but the work of construction and repair is continued.

Climate.—Mean temperature, coldest month, New Orleans, 49.5°, warmest month 82.4°; average winter 53°—61°, summer 81°—83°; average rainfall 51 in.; average temperature for year 67.55°.

Geology.—The geological formations of Louisiana are cretaceous, tertiary, and post-tertiary. The extraordinary richness of the soil is due to alluvial deposits. In the delta region sugar cane, cotton, rice, wheat, barley, buckwheat, sweet potatoes, and figs are extensively cultivated; the gulf islands produce cotton equal to that of the Atlantic sea-islands; Indian corn thrives in the tertiary region; cotton and flowers flourish everywhere; the uplands furnish excellent grazing; and the peach, quince, plum, fig, papaw, orange, apple, and pear are abundant. The minerals comprise coal, iron, salt springs, and salt deposits, ochre, marl, lead, sulphates of soda and iron, and carbonate of lime in the n.w. parishes; and sulphur, copper, and petroleum in the s. Quartz crystals, agates, jasper, carnelians, onyx, sardonyx, and fine felspar, with a large variety of fossils have been found. A deposit of sulphur, between the Calcasieu and Sabine rivers, is 112 ft. thick, and yields 96 per cent. of pure sulphur. In Winn parish is a cliff of marble that towers 70-100 ft., and descends into the lake as far as can be seen. Scientists estimate it to be at least 200 ft. high and 800-1,000 ft. thick. Petits Anse Island contains a mass of salt that has been mined to a depth of 60 ft. below the level of the gulf, 58 ft. through solid rock-salt of the purest quality.

Zoology.—Owing to its great forests, swamps, and bayous Louisiana is rich in animal life. In the forests are black bears; in the cypress swamps wild-cats, raccoons, opossums, otters, rats, dormice, squirrels, and moles; in the bayous alligators, several species of turtles, lizards, horned frogs, chameleons, vipers, moccasins, and numerous species of snakes; and in the waters nearly every fish common to the Gulf of Mexico. The birds include bald and gray eagles, king vultures, turkey-buzzards, kites, hawks, pelicans, cranes, herons, and a large number of smaller species, rich in voice and plumage; and among the game are partridges, wild geese, wild ducks, brant, pigeons, and wild turkeys.

Agriculture.—There are about 125,000 farms in the S., comprising some 13,000,000 acres, of which almost one-half is improved land. The total value of all farm property in the S., including lands and improvements, implements and machinery, and live stock, is estimated at more than $200,000,000. L. possesses remarkable nat-



STATE CAPITOL, BATON ROUGE

ural advantages for a great variety of products, ranging from temperate to semi-tropic in character. Despite this fact, the agricultural development is somewhat meagre, and instead of obtaining large returns from a great variety of products, as it logically should, L. reaps its principal results from one or two crops. The cotton crop is not anything like what it should be, and, although progress has been made along this line within the last decade, L. has been one of the slowest of all the States in recovering from the effects of the Civil War. However, the cotton crop is one of the chief crops of the S. Sugar also forms a very important crop, L. supplying a great part of the national crop, while rice culture, promoted by irrigation, has assumed a tremendously increasing importance of late, and has really been the means of transforming the great coast-prairie belt of the s.w. and s.e. Of the other crops the most important are corn, oats, potatoes and hay.

Manufactures.—There are considerably over 2,000 manufacturing establishments in the S., whose annual production aggregates more than $200,000,000. The most important industry is the refining of sugar and molasses; followed by lumber and timber products; oil, cotton-seed, and cake; rice cleaning and polishing; bags, other than paper; foundry and machine-shop products; printing and publishing; bakery products; lumber and planing-mill products, etc.; cars and general shop production, etc.; and malt liquors. Among the other important industries are cooperage, food preparations, roasting and grinding coffee and spice; fertilizers; manufactured ice; brick and tile; and the canning and preserving of oysters.

Commerce.—Most of the domestic and foreign trade passes through New Orleans, which ranks well among ports of the United States in the volume of its foreign commerce. The annual imports at that port average over $40,000,000, and the total exports about $175,000,000. Altogether steam and sailing vessels aggregating fully 4,000,000 tons, enter and clear during a year.

Transportation.—The railway system of L. has grown rapidly of recent years, now approximating a mileage of nearly 5,000 miles of track, the chief lines being the Southern Pacific, Louisville & Nashville, and Illinois Central. The total length of the navigable streams in the S. is only slightly under 4,000 miles, placing L. first in this respect. The lower part of the S. is a vast network of paths to the ocean, aggregating 2,500 miles, while the entire length of the Mississippi river in the S., amounting to 600 miles, is navigable. A canal from the river to Lake Borgne has greatly lessened the distance from New Orleans to the Gulf and to the coal fields of Alabama.

Finances and Banking.—The total assessed valuation of the State, including personal and realty prop-

erty, is $529,419,463, and the bonded debt $11,108,300. The State cannot incur debts except to repel invasion or suppress insurrection. A poll tax on each adult male goes to the school fund. There are about 40 national banks, besides nearly 200 State and savings banks and trust companies.

Religion.—The strongest denominations are the Baptists, Southern Methodists, Roman Catholics, Presbyterians, Protestant Episcopalians, Lutherans, and Unitarians. New Orleans is the seat of a Roman Catholic archbishopric and also of both Protestant and Methodist Episcopal bishoprics.

Education.—The S. spends almost $2,500,000 annually in maintaining its public schools, in which there are more than 225,000 pupils enrolled, with about 7,000 teachers. By the law of 1902 the school administration is centralized in a S. board of education, consisting of the Governor and seven appointees, the superintendent of education, and the attorney-general. This appoints a four-year board of education for each parish (county), which, in turn, appoints parish superintendents. The S. contains public normal schools, private secondary schools, co-educational colleges and universities, colleges and universities for men only and also for women only, and schools of law and medicine. Of the institutions of higher education the most prominent are probably the Tulane University of L., comprising colleges of arts and sciences, and of technology, law, and medicine, as well as the Sophie Newcomb Memorial College for Women, and the Silliman Collegiate Institute at Clinton.

Illiteracy.—There are altogether about 350,000 illiterates in the State, of whom about two-thirds are negroes and the rest for the most part foreign-born whites.

Newspapers and Periodicals.—There are nearly 200 newspapers and periodicals published in the State, of which about 10 are printed in French, German, or Italian. The great bulk of these publications are weeklies, although there are about 20 papers which are issued daily, except Sunday, and about 10 issued every day.

Charities and Corrections.—The most important charitable and corrective institutions in the S. include the State Insane Asylum at Jackson; a Lepers' Home in Iberville parish; S. hospitals at New Orleans and Shreveport; the L. Institute for Deaf and Dumb at Baton Rouge; Charitable Deaf-mute Institution of the Holy Rosary at Chinchuba; the L. Institution for the Education of Blind and Industrial Home for the Blind at Baton Rouge; and the Boys' House of Refuge at New Orleans.

History.—De Soto (q.v.) and his followers are believed to have been the first Europeans who visited Louisiana, reaching the Mississippi river 1541. Marquette (q.v.) descended the river from Canada 1673, and La Salle (q.v.) following Marquette's course, took possession

of the country in the name of Louis XIV. 1682, Apr. 9, and named it Louisiana. The first settlement was made by Iberville (q.v.) 1699, at Ocean Springs, called Old Biloxi, now in Mississippi, and the next by his successor Bienville, on Dauphin Island and at Mobile, now in Alabama, 1702. In 1717 the province of Louisiana was granted to the Western Company or the Company of the Indies, which became connected with John Law's celebrated and disastrous Mississippi scheme; and 1718 the first permanent settlement was founded at New Orleans. The Western Company surrendered its grant to the crown 1732, and the French managed the colony till 1762, when the entire province of Louisiana was ceded to Spain. In 1800, to the gratification of its inhabitants, the province was re-ceded to France, and 1803 it was sold by France to the United States for $15,000,000. The territory then described under the name Louisiana comprised all the vast region w. of the Mississippi river not occupied by Spain, as far n. as the British territory. From it have since been organized the states of Arkansas, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska, Oregon, Colorado, North Dakota, South Dakota, Washington Montana, Idaho, Wyoming, and Oklahoma. Possession was taken and the American flag raised 1803, Dec. 20. In the following year the lower portion, including the present state of Louisiana w. of the Mississippi and a part e. of that river, was constituted the territory of Orleans, and all the country n. and w. of it the territory of Louisiana. In 1810 the country between the Mississippi and the Amite and Pearl rivers was annexed to the territory of Orleans. 1812, Apr. 14, the territory was admitted into the Union as the state of Louisiana, and July 4 the name of the former territory of Louisiana was changed to the territory of Missouri. The young state rendered signal service to the government in the war of 1812-15, the crowning battle being fought at New Orleans 1815, Jan. 8, and resulting in the total defeat of the British. (See JACKSON, ANDREW.) Between that event and the beginning of the civil war, the state prospered greatly, adopted new constitutions 1845 and 52, and saw its chief city become the second cotton port of the world. After the election of President Lincoln 1860, Nov., the governor of Louisiana convened the legislature Dec. 10, which called a popular convention 1861, Jan. 23, and this convention passed an ordinance of secession Jan. 26. Between the special meeting of the legislature and the popular convention, the state authorities took possession of Forts Jackson and St. Philip on the Mississippi river, 75 m. below New Orleans, and Fort Livingstone in Barataria Bay and Fort Pike at the entrance of Lake Pontchartrain, as well as the United States arsenal with large military stores at Baton Rouge, and the United States mint and custom house in New Orleans. On Mar. 21 the state ratified the Confederate constitu-

tion. The first federal operations in the state were in 1862, Apr., and resulted in the capture of New Orleans. (See FARRAGUT, DAVID GLASCOE; JACKSON, FORT, and FORT ST. PHILIP, Capture of.) Gen. Benjamin F. Butler commanded the city May 1—Dec. 14; he was superseded by Nathaniel P. Banks. While naval and military operations were in progress on the Red and Atchafalaya rivers, Gen. Butler ordered an election for representatives in congress from the two districts in possession of the Union forces, only qualified voters who had taken the oath of allegiance after the capture of New Orleans being allowed to vote. He also organized local courts in New Orleans, and a provisional court for the state was instituted by order of President Lincoln 1862, Dec. In 1863, Apr., the president appointed a number of judges of the state supreme court, and Dec. 8 authorized an election for state officers in 11 whole parishes and parts of 6 others—all within the federal lines—which was held 1864, Feb. 22. Michael Hahn was elected governor, inaugurated Mar. 4, and given powers of a military governor by the president Mar. 15. A constitutional convention was held Apr. 6—July 23, which adopted a constitution abolishing slavery. This was ratified by the people Sep. 5. The convention also elected 5 Union representatives in congress, but they were not seated, nor was the constitution recognized by congress. The legislature elected 1865, Nov., chose democratic United States senators, who were not admitted to seats. In 1866 there was a riot in New Orleans over political matters, which created much excitement throughout the country. In 1867 Louisiana and Texas were designated as the 5th military district under the Reconstruction Acts, and placed under command of Gen. Philip H. Sheridan Mar. 19. He was removed by President Johnson in Aug., and Gen. Mower held command till the arrival of Gen. Winfield S. Hancock Nov. 29. A second constitutional convention was held in New Orleans from 1867, Nov. 23—1868, Mar. 9, and the constitution then framed was ratified by the people Apr. 17, 18. At the same time a republican governor—Henry C. Warmouth—and a legislature republican in both houses were elected. Gen. Hancock was removed Mar., and was succeeded by Gen. R. C. Buchanan. The state was admitted to representation in congress by an act of June 25; on the 29th the legislature ratified the XIVth amendment to the federal constitution and elected United States senators; and on the inauguration of Governor Warmouth July 13, the state was formally placed under control of local civil authorities. In 1869, Feb. and Mar., both houses of the legislature ratified the XVth amendment to the federal constitution. During 1868-78 the state was the subject of political turmoil that led to the organization of two legislatures and the inauguration of republican and democratic governors at the same time; the loss of the state's electoral vote 1872;

the intervention of federal authority; and fatal encounters between the military forces of both political parties. From 1864 till 1881 New Orleans was the capital, but in the latter year the seat of government was restored to Baton Rouge. A constitution was adopted 1879, Dec. 2, and since then the state has been under democratic control without political disturbance. The most important item in the subsequent history was the passing of the Constitution of 1898, with the 'Grandfather Clause,' to disfranchise the negroes, which has reduced the negro registration to 7,000, as against 120,000 whites.

Government.—The executive authority is vested by the constitution in a governor, elected for 4 years; the legislative authority in a general assembly, comprising a senate of from 36 to 41 members elected for 4 years, and a house of representatives of from 98 to 110 members elected for 4 years; and the judicial authority in supreme, district, superior, criminal, recorders', and parish courts, and justices of the peace. The supreme court consists of a chief justice and 4 associate justices, appointed by the governor, with the consent of the senate, for 12 years. There are judicial districts, to be not less than 20 nor more than 29; the judges are elected for 9 years, as is the district attorney for each. Since 1904 there has been a court of appeals, composed of two district judges designated by the supreme court. Other officials are: lieutenant-governor, secretary of state, treasurer, auditor, attorney-general, adjutant-general, superintendent public instruction, and commissioner of agriculture and immigration.

The successive governors, with their terms of service since the purchase of the territory from France are as follows: *Terr.:* W. C. C. Clairborne 1804-12; *State:* W. C. C. Clairborne 1812-16; Jacques Villeré 1816-20; Thomas B. Robertson 1820-24; H. S. Thibodaux (acting) 1824; Henry Johnson 1824-28; Peter Derbigny 1828-29; A. Beauvais (acting) 1829-30; Jacques Dupré (acting) 1831; André B. Roman 1831-35; Edward D. White 1835-39; André B. Roman 1839-43; Alexander Mouton 1843-46; Isaac Johnson 1846-50; Joseph Walker 1850-53; Paul O. Hebert 1853-56; R. C. Wickliffe 1856-60; Thomas O. Moore 1860-62; George F. Shepley 1862-64; H. W. Allen 1864-65; Michael Hahn 1864-65; James M. Wells 1865-67; Benjamin F. Flanders 1867-68; Joshua Baker 1868; Henry C. Warmoth 1868-72; P. B. T. Pinchback 1872; J. McEnery (claimant), William Pitt Kellogg (recognized) 1873; William Pitt Kellogg 1873-77; Stephen B. Packard (claimant), Francis T. Nichols 1877-80; Louis A. Wiltz 1880-81; S. D. McEnery 1881-88; Francis T. Nichols 1888-92; Murphy J. Foster 1892-1900; William H. Heard 1900-04; Newton C. Blanchard 1904-08; Jared Y. Sanders 1908—

Politics.—Biennial elections for members of congress; quadrennial for legislature and state officers; state elec-

tions, Tuesday after the third Monday in Apr.; legislature meets biennially in even numbered years on second Monday in May; limit of session 60 days. Voters must be registered. Idiots, insane, and persons convicted of treason, embezzlement of public funds, illegal voting, bribery or like crime punishable by hard labor or imprisonment, are excluded from voting. Louisiana has 9 electoral votes. Her votes for president and vice-president have been as follows: 1812, James Madison and Elbridge Gerry 3; 1816, James Monroe and Daniel D. Tompkins; 1820, James Monroe and Daniel D. Tompkins; 1824, Andrew Jackson 3, John Adams 2 for president, John C. Calhoun 5 for vice-president; 1828, Andrew Jackson and John C. Calhoun 5; 1832, Andrew Jackson and Martin Van Buren; 1836, Martin Van Buren and Richard M. Johnson; 1840, William Henry Harrison and John Tyler; 1844, James K. Polk and George M. Dallas; 1848, Zachary Taylor and Millard Fillmore 6; 1852, Franklin Pierce and William R. King; 1856, James Buchanan and John C. Breckinridge; 1860, 64, no vote; 1868, Horatio Seymour and Francis P. Blair; 1872, not counted, 8; 1876, Rutherford B. Hayes and William A. Wheeler; 1880, Winfield S. Hancock and William H. English; 1884, Grover Cleveland and Thomas A. Hendricks; 1888, Grover Cleveland and Allan G. Thurman; 1892, Grover Cleveland and Adlai E. Stevenson; 1896, William J. Bryan and Arthur Sewall; 1900, William J. Bryan and Adlai E. Stevenson; 1904, Alton B. Parker and Henry G. Davis.

Population.—(1810) 76,556; (1820) 153,407; (1830) 215,739; (1840) 352,411; (1850) 517,762; (1860) 708,002; (1870) 726,915; (1880) 939,946; (1890) 1,118,587; (1900) 1,381,625; (1910) 1,656,388.

LOUISIA'NA: city in Pike co., Mo.; on the Mississippi river and the Chicago & Alton, and Chicago, Burlington & Quincy railroads; 25 m. s. of Hannibal, 101 m. n.e. of Jefferson City. It contains churches, public library, high school, flour mills, planing mills, foundries, tobacco factories, carriage and wagon factories, button factories, stone quarry, lime kiln, brick yards, etc. There is also an extensive trade in agricultural products and nearby are large nurseries. Pop. (1910) 4,454.

LOUISIANA, Code of: In the history of law in the United States the first important experiment with a code in the United States was made in Louisiana, which state, originally a French colony, afterward ceded to Spain, again returned to France, and subsequently acquired by the United States from France, has had many changes of law. After the United States acquired Louisiana there arose a strong demand for a code, owing to the great confusion of laws. In 1806-8 a code was adopted, but only to supersede the ancient laws when they conflicted with it. A complete civil code was adopted for the state in 1824, which had for its basis the *Code Napoléon,* al-

though some provisions of the common law were injected into it. The Louisiana code was the foundation for a later code prepared for the state of New York under the guidance and supervision of David Dudley Field. This code, although published, and having formed the foundation for many of the codes adopted by the various states, was never accepted by the legislature of New York. See CODE.

LOUISIANA CREOLES: This appellation belongs exclusively to persons of French and Spanish descent born in Louisiana; notwithstanding the prevalent error to the contrary according it to Louisiana-born children of any European blood. Though often misrepresented, the creoles of Louisiana, as a matter of fact, are intelligent, brave, and generous, and are, by no means, inferior in the matter of education; they are also in the enjoyment of the highest social privileges. The women of true creole lineage are world-famed for grace and beauty. The creoles have furnished Louisiana some of its ablest governors, its most distinguished military men, its eminent writers, its leading professional men, financiers and merchants. In 1904 they held a number of the most exalted offices in the state, and were likewise fully represented in all branches of high and meritorious effort. Very many of the creoles now in Louisiana are descended from high and noble families in France and Spain, and they treasure the lofty traditions of their ancestry. The expression 'creole negro' is often used, and its employment has perhaps contributed to the false impression which some entertained that the Louisiana creole, truly such, must be, or is, of negro blood. The term under immediate consideration simply means that the negro to whom it is applied, or his progenitors, has been reared under a creole master. So far as the true creole families are concerned, they have been jealous of their Caucasian lineage and careful to maintain the purity of their blood. The word 'creole' is often used to designate the origin of certain products of the field and farm, such as creole chickens, eggs, butter, etc. The meaning of this is that the products thus named are strictly from creole portions of the state of Louisiana. A certain debased idiom of the French employed among negroes, and, to some extent, among creole children and lower whites, is popularly called 'creole.' It has figured in literature in the shape of short stories, proverbs, etc. The better element of creole adults speak and write the French language in its purity. The majority likewise, have a correct and fluent use of the English language.

LOUISIANA PURCHASE, THE: was the purchase by the United States from France of the province of Louisiana, the treaty of sale being dated 1803, Apr. 30. The price paid for the province was $15,000,000. Its area was 875,000 sq.m. (almost as great as that of England, Ireland, Scotland, Wales, France, Germany, Spain, the

Netherlands, Italy, and Switzerland), as compared with 820,944 sq.m. in the original 13 states. Its limits extend from the Mississippi river on the e. (including the New Orleans district e. of the Mississippi) to the main divide of the Rocky Mountains and to the Arkansas, the Red and the Sabine rivers on the w.; and from the Gulf of Mexico to the Canadian line.

The results of this transaction were to prevent forever the erection of a hostile power on the w. bank of the Mississippi and to make inevitable the ultimate annexation of Texas, Oregon, New Mexico, and California, and the expansion of the United States into a nation of continental proportions and of world influence. It was perhaps the most important sale of territory ever made. President Jefferson wanted New Orleans in order to control the mouth of the Mississippi on the e. side, and offered to guarantee to Napoleon all the territory w. of the Mississippi if this inducement became necessary in order to get that town. Looking for a city, he had an empire thrust upon him. Napoleon's necessities—his war with England, his desire for money to aid in prosecuting the war, his determination that England should not gain the territory, and his wish to raise up a rival to England on sea and land—worked to the eternal advancement of the United States, of representative institutions, and of the world's progress.

The wilderness which Jefferson's enemies ridiculed him for buying comprises today, in whole or part, chiefly in whole, 13 states—Louisiana, Arkansas, Missouri, Iowa, Minnesota, North Dakota, South Dakota, Nebraska, Kansas, Colorado, Wyoming, Montana, and Oklahoma. This region is nearly a third of the area of the present United States, and it gives homes to almost a fifth of its inhabitants. Its population of 50,000 in 1803 had expanded to 14,708,616 in 1900, or nearly three times the population of the entire United States in 1800.

Besides transferring the United States' boundaries from the Mississippi ultimately to the Pacific, the Louisiana annexation and its direct results, the acquisition of Texas, of New Mexico, of California and of Oregon, swung the seat of the country's activities across the Alleghanies into the great valley. The geographical centre of the contiguous parts of the United States is in northern Kansas, in the heart of the Louisiana Purchase, and the other pivotal points are traveling rapidly in the same direction. The centre of population, which was a few m. w. of Baltimore in 1801, when Jefferson was first inaugurated, was near Columbus, Ind., in 1900; and the centre of manufactures, which was hurrying after it, was close to Mansfield, Ohio, in the same year. At the same time the centre of the corn production was 54 m. s.w. of Springfield, Ill., and the centre of the number of farms was 110 m. e. by s. from St. Louis, in Wayne co., Ill., not far from the Louisiana Purchase border.

LOUISIANA PURCHASE EXPOSITION, The, or Universal Exposition: held at St. Louis, Mo., in 1904, opening April 30; one of the greatest exhibitions the world has ever known; 42 states and 53 foreign governments having exhibits. The various states appropriated $3,000,000 more for this exposition than for the Chicago World's Fair, and the vast exhibit covered more ground than the Chicago, Paris, and Buffalo expositions combined. The Government building was 1 m. from the Grand Trianon of France, along a stately boulevard, between 8 of the finest exhibit palaces ever built. The boulevard was crossed by 3 courts; the central court was 2,500 ft. long and 600 wide. Between the palaces was a m. of lagoons and canals. The amusement street was a m. long. The Philippines covered 40 acres. The Agricultural Palace was 1,600 ft. long and covered 20 acres. The dome of the Hall of Festivals was 200 ft. high. It contained the largest organ in the world, 62 ft. wide, 40 ft. high, with 10,000 pipes. The intramural railroad was 9 m. long and touched every point of interest in a site 2 m. long and 1 m. wide. A volume of over 200 pages was required for the prize lists and regulations of the Live Stock Department alone. This department includes 8 groups, and there were 15 of these great Exhibit Departments, including 141 groups and 801 classes. Besides broadening the scope of each department so as to include a greater number of related groups and classes, this exposition was the first to organize a distinct educational department and rank it in the post of honor at the head of the list. Here, for the first time, the educator was given opportunity to compare intelligently the educational systems, institutions, methods, and work of the various European nations with those of the United States, which include the competitive exhibits of the public schools of all the states and cities. In the social economy department was exhibited a complete and thorough illustration of the new science of humanity, embracing all the enormous advances in the past 10 years along this line by every government and city in Europe and America; showing state regulations of industry and labor, industrial organization of workers, methods of industrial remuneration, coöperative institutions, the housing of the working classes, liquor regulations and general betterment movements. Independent of this department, but related to it as an 'outside exhibit' was a great 'Model City,' in which the leading cities of Europe and America displayed their municipal utilities, economies and betterments. The physical culture department, equipped with a gymnasium and athletic field, race track and an immense amphitheatre, and aided by the counsels and active coöperation of the leading athletic associations of the world, conducted a protracted series of athletic events lasting from May 14 to Nov. 24, at which a long list of splendid prizes and championships were

competed for in intercollegiate, interscholastic, and international contests, embracing all sorts of games, feats, and sports. Among these were the great Olympic games. Among the other features were the International Press Parliament, the International Congress of Jurists, and the World Congress of Arts and Sciences. Here also were assembled the world's first fleet of air-ships and flying machines, in competition for a prize of $100,000.

Each of the 15 departments in the great exhibition outgrew all plans and anticipation; and the result was a much vaster display than was at first thought possible. Additional areas were necessarily allotted to the great palaces of art, of liberal arts, of manufactures, of varied industries, of machinery, of electricity, of transportation, of agriculture, of horticulture, of fish, game and forestry, and of mines and metallurgy. Besides the exposition company's cash fund of $15,000,000, the United States spent $1,650,000 on its own separate exhibits; foreign governments over $6,000,000; $6,500,000 were spent by the several states on their exhibits, and immense sums by cities, associations, fraternities, corporations, and individual exhibitors.

LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE: a state educational institution at Baton Rouge, La. In 1855 a state school was founded under the name of the State Seminary of Learning, and was opened in 1860 with W. T. Sherman (later General Sherman) as superintendent. In 1861-5 the school was suspended on account of the war. In 1874 an agricultural college was established and temporarily located at New Orleans; in 1877 it was merged with the college at Baton Rouge and the university chartered under its present name. The courses offered are the Latin-scientific, literary, general science, mechanical and civil engineering, agriculture, and commerce; in the agricultural department a special course of 5 years is given on the cultivation and manufacture of sugar. There are three experiment stations connected with the university, one at New Orleans, one at Baton Rouge, and the third at Calhoun. Military drill is also a part of the curriculum. In 1907, the total income, including state and federal appropriations, amounted to $113,365; the number of students was 549, of professors and instructors, 40; and the library numbered 25,500 volumes.

LOUIS NAPOLEON (Charles Louis Napoleon Bonaparte): titular designation, Napoleon III., Emperor of the French: 1808, Apr. 20—1873, Jan. 9 (reigned 1852-70); b. Paris, in the palace of the Tuileries; third son of Louis Bonaparte, brother of the first emperor. (See Bonaparte Family.) His birth was celebrated with great rejoicing throughout France, as that of an heir to the imperial throne, for by the law of succession (dated 28th Floreal, year 12, and 5th Frimaire,

year 13), the crown, in default of direct descendants of the Emperor Napoleon himself—and he at that time had none—could be inherited only by the children of two of his brothers, Joseph and Louis. Joseph had no sons, and the sons of Louis became heirs-apparent. After the restoration of the Bourbons, the ex-queen Hortense, mother of Louis Napoleon, went into exile, carrying with her her two sons, Napoleon Louis and Louis Napoleon. Since 1810, she had been separated from her husband. Louis received his early education in the castle of Arenenberg, on the shores of Lake Constance, where his mother resided. He was furnished with the best tutors and was an industrious pupil. At the gymnasium of Augsburg, he showed a taste for history and the exact sciences. His love of athletic sports was equally conspicuous; he was one of the best fencers, riders, and swimmers in the school. In Switzerland, his inclination and aptitude for military strategy, especially in artillery and engineering, was developed. He even served as a volunteer in the federal camp at Thun, and at a later period wrote *Manuel d'Artillerie* (Zürich 1836). In 1830, when an insurrection broke out in the pontifical states, Louis Napoleon and his brother took part in it. The latter died at Forli, and Louis Napoleon himself was dangerously ill at Ancona, and was saved only by the tender devotedness of his mother. The Austrian occupation of Ancona forced them to quit the city secretly; they went to France but their incognito being betrayed, they were expelled by Louis Philippe after a few days, and proceeded to England, whence they soon returned to Switzerland. Such, however, was the charm of Napoleon's inherited name, that the chiefs of the Polish insurrection offered him, 1831, the command of their legions 'as the nephew of the greatest captain of all ages,' also the crown of Poland. The capture of Warsaw by the Russians, however, put a stop to further proceedings in this matter, and Louis Napoleon returned to his silent and sombre studies. The death (1832, July 22) of the Duke of Reichstadt, sometimes called *Napoleon II.*, only son of the first emperor, opened the future to his ambitious hopes; and even his supporters admit that, from this date forward, his whole life, speculative and practical, was devoted to the realization of what now became his 'fixed idea'; viz., that he was destined to be the sovereign of France. He published several works, 1832-36, which not only kept him prominently before the French public, but evoked considerable political and intellectual sympathy: among these were *Rêveries Politiques, Projet de Constitution, Deux Mots à M. de Chateaubriand sur la Duchesse de Berri* (in verse), and *Considérations Politiques et Militaires sur la Suisse.* In 1836, believing in the instability of the throne of Louis Philippe, and in the general disaffection of the *bourgeoisie,* encouraged also by the proofs of vivid attachment to his person displayed by nearly the whole

democratic party, he, with a few associates, among whom was the Comte de Persigny, made his famous attempt at a *coup d'état* at Strasbourg. It was a ludicrous failure. Louis Napoleon was taken prisoner under humiliating circumstances, and after some days conveyed to Paris; but the government of Louis Philippe was afraid to bring a Bonaparte to trial, and in consequence sent him to America. The illness of his mother soon caused him to return to Europe. He found her dying; two months later she passed away (1837, Oct. 3). Although the affair of Strasbourg had naturally caused many people to doubt the talent and particularly the judgment of Louis Napoleon, still Louis Philippe dreaded some new conspiracy, and, in consequence, the French government demanded of Switzerland the expulsion of the prince from its territories. Switzerland was violently agitated, and was almost on the point of going to war for the distinguished refugee, when the latter resolved to prevent a rupture by leaving his adopted country. He went to England, and settled in London. With certain members of the British aristocracy, he came to live on a footing of intimacy. In 1838, he published in London his *Idées Napoléoniennes,* which, read in the light of subsequent events, are very significant. Europe generally regarded them as idle dreams; but in France the book went through numerous editions. In 1839, Louis Napoleon was in Scotland, and took part in the celebrated Eglinton tournament. Next year (1840), taking advantage of the sentiment aroused by the bringing home the ashes of his uncle from St. Helena, he made another attempt on the throne of France at Boulogne. It was a failure even more grotesque than the one at Strasbourg. Captured on the shore, while endeavoring to make his escape to the vessel that had brought him from England, Louis Napoleon was again brought to trial, and condemned to perpetual imprisonment in the fortress of Ham. Here he composed several works, *Aux Mânes de l'Empereur; Fragments Historiques; Analyse de la Question de Suisse; Réspense à M. de Lamartine;* and *Extinction du Paupérisme,* wrote political articles for the democratic journals, and actually took part in editing the *Dictionnaire de la Conversation,* a valuable French encyclopedia. After an imprisonment of more than five years, he made his escape, 1846, May 26, by the help of his friend and fellow prisoner, Dr. Conneau, in the disguise of a workman, and he returned to England. The revolution of 1848, Feb., in which Louis Philippe lost his throne, caused him to hurry back to France, where he professed himself devoted to the views of the Provisional Government; the latter, however, requested him to leave the country. This he promised to do; but being elected deputy for Paris and three other departments, he took his seat in the constituent assembly, 1848, June 13. A stormy debate followed, and on the 15th he resigned his seat, and left

France. Recalled to France in the following Sep. by a quintuple election, i.e., a choice in five depts., he again appeared in the assembly, and at once commenced his candidature for the presidency. The masses were in his favor. Out of seven and a half million of votes, 5,562,-834 were recorded for Prince Louis Napoleon; General Cavaignac, who was next to him, obtaining only 1,469,-166. This fact is declared by the partisans of the emperor to be an absolute proof of his popularity, for at this period he had neither power nor money. Dec. 20, as the president, he took the oath of allegiance to the republic. For a few days, concord seemed re-established between the different political parties in the assembly; but the beginning of 1849 witnessed the commencement of a series of struggles between the president and his friends on the one side, and the majority of the assembly on the other—the latter being profoundly penetrated with the conviction that Louis Napoleon was devoted not to the interests of the republic, but to his own. The French expedition to Italy and the siege of Rome were, above all, the causes of violent discussion in the chambers. This anarchic condition of things, in which, however, the president tenaciously held his ground, was summarily ended by the *coup d'état* of 1851, Dec. 2. The principal actors in this midnight deed were the president himself, M. de Morny, M. de Maupas, and Gen. St. Arnaud. His success was certainly magnificent, but the cost also was enormous. The feeble attempts at an armed resistance in Paris were put down by the military, who were favorable to the president. A rigorous system of repression was put in force both in Paris and in the departments, and the deportation of citizens to Cayenne and Algeria became painfully familiar to the European public. France, as a whole, however, appeared to acquiesce in his act of Dec. 2; for when the vote was taken upon it on the 20th and 21st of the same month, he was re-elected president for ten years with all the powers that he demanded, by more than 7,000,000 suffrages. Louis Napoleon was now emperor in fact; nothing was wanting but the name. This was assumed exactly a year after the *coup d'état,* in accordance, as it appeared, with the wish of the people. Louis Napoleon was a thinker, but no administrator. He had no gift of discerning and calling around him trustworthy and capable officials. Among the events of his reign were the conspiracies against him (1853), the attempts at assassination (by Pianori 1855, and Orsini 1858), the Anglo-French alliance and the Crimean war (1854-56), the Franco-Italian war (1859), and the Mexican campaign (1863). In 1870, Louis Napoleon declared war against Prussia; and, after a swift succession of terrible defeats, he surrendered himself to the Germans a prisoner at Sedan, in September. (See FRANCO-GERMAN WAR.) Till the conclusion of peace he was confined at Wilhelmshöhe. In 1871, Mar.,

he joined the empress at Chiselhurst, Kent, England, and resided there till his death, 1873.

LOUIS PHILIPPE, *lô-ē' fe-lēp'*, King of the French: 1773, Oct. 6—1850, Aug. 26 (reigned 1830-48); b. at the Palais Royal, Paris; eldest son of Louis Philippe Joseph, Duke of Orleans, and descended from the younger brother of Louis XIV. He received at his birth the title Duke of Valois, and afterward that of Duke of Chartres. His education was intrusted to the care of the celebrated Madame de Genlis. He entered the National Guard, and became a member of the Club of Friends of the Constitution, afterward that of the Jacobins. Together with his father, he renounced his titles, and assumed the surname Egalité. He showed both courage and capacity in the war; but his situation became very dangerous after the unsuccessful battle of Neerwinden, in which he commanded the centre. He was included in the order for arrest issued against Dumouriez, and 1793, Apr. 4, escaped with him into the Austrian territory. He sought in Switzerlend a place of security for his sister Adelaide, wandered about among the mountains four months, and accepted a situation as teacher of geography and mathematics in a school at Reichenau, near Chur, assuming the name Chabaud-Latour. He afterward wandered for some time in n. Europe, and then went to the United States. In 1800 he took up his abode at Twickenham, near London, with his two younger brothers, both of whom soon died. In 1809, he married Marie Amelia, daughter of Ferdinand I. of the Two Sicilies. On the fall of Napoleon, he hastened to Paris, where he was received with distrust by Louis XVIII. After the second restoration, he recovered his great estates, which the imperial government had sequestrated. Disliked by the court, he was very popular in Paris. He kept aloof, however, from political intrigues; and the three bloody days of the revolution of 1830 were nearly over ere he was brought forward, the banker, Laffitte, proposing in the provisional committee his appointment as lieutenant-general of the kingdom, from which he proceeded to the acceptance of a constitutional throne, 1830, Aug. 9. He defended his conduct toward the elder Bourbons by protesting that he acted for the welfare of France. He cultivated peaceful relations with foreign powers, sought to strengthen his throne by gaining the support of the middle classes, and repressed all the extreme parties by what became known as the *Juste-Milieu* policy (q.v.). The extreme democrats hated him, and frequent attempts were made on his life. The country prospered under his government, but a demand for reform in the electoral system became loud and general, and was unwisely opposed by the king and the Guizot ministry; while the conduct of the king in the matter of the marriages of the queen of Spain and her sister evoked strong indignation throughout

Europe. The French nation became excited; 'reform banquets' began to be held; the government attempted to prevent them by force; insurrectionary movements ensued in the streets of Paris 1848, Feb. 22, and the 'Citizen King' saw with alarm that the National Guard could not be expected to support him. Feb. 24 he abdicated in favor of his grandson, the Count de Paris; but the chamber of deputies refused to acknowledge the boy as king. Louis Philippe, deserted by his courtiers, fled with his queen to the coast of Normandy, concealed himself for some days, and at length found opportunity of escaping in a British steamboat to Newhaven under the name of Mr. Smith. The brief remainder of his life was spent in England, and he died at Claremont.

LOUIS QUATORZE, n. *lô'ē kâ-tawrz':* name given to a style of architecture and internal decoration prevalent in France in the reign of Louis XIV. (1643-1715). It is characterized by a deterioration of simplicity and good taste and a striving after pomp and magnificence in every detail. The windows are larger, the rooms more lofty, than in buildings of earlier date, free use is made of Roman columnar orders and rustication. In internal decoration mirrors are a distinctive feature, accompanied by a lavish use of gilt stucco work, scroll and shell patterns being the most common.

LOUIS QUINZE, n. *lô'ē kângz:* name sometimes given to the style of architecture and internal ornamentation prevalent in France during the reign of Louis XV.

LOUISVILLE, *lô'ĭ-vĭl:* chief city of Ky.: cap. of Jefferson co.; opposite the Falls of the Ohio river, about 600 m. below Pittsburgh, and 400 m. above Cairo; lat. 38° 14′ 57″ n., long. 85° 47′ 40″ w.; popularly known as the Falls City. It occupies a great plateau on the s. bank of the Ohio, 70 ft. above low water. The river forms on its northern boundary a graceful curve eight miles in length, and, with its current obstructed by a ledge of rocks which, like a dam, causes the rapids or falls, spreads out into a deep and beautiful lake a mile in width.

The plan of Louisville presents a series of streets running e. and w., parallel with the river, crossed at right angles by streets running n. and s., though in some sections the streets run in all directions. Broadway is 120 ft. wide; Main, Market, and Jefferson streets each 90 ft.; the others, with unimportant exceptions, are 60 ft. wide. The principal streets are paved with granite or asphaltum; their sidewalks are broad and bordered with shade trees. Along these streets, the residences, usually of stone or brick, stand on lots large enough for ventilation and for shrubbery, flowers, and trees on a bluegrass sward. There is a combined length of streets and alleys of more than 300 m. The streets are well paved and well lighted, and electric cars provide adequate transportation. There is an abundant supply of natural gas for

heating. The location of Louisville gives it command of the 2,000 m. of river system of the state, including the six interstate navigable rivers, Licking, Kentucky, Salt, Green, Cumberland, and Tennessee. To this great length of navigable rivers the railroads within the state add nearly 4,000 m. of land transportation. Moreover, by several bridges across the Ohio, the city shares the advantages of the great railroad system of the whole country.

Thus admirably located as the centre of collection and redistribution for vast areas of rich agricultural lands and virgin forests and inexhaustible mines of coal and iron, Louisville has become noted for manufactures. Without enumerating unimportant works, there are 2,307 manufacturing establishments, with combined capital of over $41,000,000, employing 29,000 hands, with annual products to the value of more than $78,000,000. The first whisky distillery in the state was built in Louisville in 1783; small distilleries multiplied rapidly in the early days of the town, but after the civil war the character of the distilling industry was changed by the introduction of modern business methods, and the smaller distilleries were replaced by larger establishments. The 5th district of Kentucky is the largest producer of Bourbon whisky in the world, and the city of Louisville produces a large proportion of its enormous yield. Besides being the most valuable industry of Louisville, it is also the best of taxpayers, as the U. S. govt. well understood when its internal revenue department collected from this district in one year $12,281,356 as the tax on 13,634,830 gallons which were withdrawn from the government warehouses. Louisville is also the centre of the brewing industry in the state; a number of other important industries are centered in the city; among them are the tanneries, the first tannery having been erected in 1848; the manufacture of jean clothing, which was begun here in 1857 and has largely increased since the civil war; and the manufacture of tobacco.

There are numerous daily, weekly, semi-weekly, monthly and semi-monthly publications, of which the *Courier-Journal* has become the widest known through the national reputations of its famous editors, George D. Prentice and Henry Watterson (q.q.v.).

The educational system is not surpassed by any city of the same class. There are 72 free schools, with about 600 teachers and nearly 30,000 pupils enrolled. Four of these schools, the Male High School, the Female High School, the Normal School, and the Manual Training School, are really colleges, providing courses of study and training sufficient for all practical purposes. The private schools are numerous and of the best type, including the Flexner School, St. Xavier's College, and other secondary schools. Among institutions of higher learning are the University of Louisville, which has a

LOUISVILLE IN 1845.

large medical department, and eight other medical schools, including the Hospital College of Medicine, the Kentucky School of Medicine, the Medical Department of Kentucky Univ., the Louisville Medical College, and the Louisville National Medical College. Medical teaching began in Louisville in 1833, when the 'Medical Institute,' which afterward became the medical department of the Univ. of Louisville, was incorporated by an act of the legislature. There are also two theol. seminaries, the Southern Baptist Theological Seminary, and the Louisville Presbyterian (South) Theological Seminary, both well endowed and in a flourishing condition; a law school, a school of dentistry, two schools of pharmacy, a school for the blind, and a number of schools of music, art, etc. Several of the private academies for young women take rank among the very best in the land. The only public library is the Louisville Public Library (over 60,000 volumes), which occupies a new Carnegie building. There are, however, private libraries, e.g., of the Bapt. theol. seminary, and of the law and medical depts. of the Univ. of Louisville, which are practically public. Among the large and valuable libraries in the hands of private individuals, to which the public have partial access, is that owned by Reuben T. Durrett, LL.D. (over 50,000 volumes)—one of the largest collections in the country; it is in daily public use almost as if it were a public library.

There is ample provision of charitable institutions: hospitals, asylums, orphanages, infirmaries, reformatories, 'homes,' etc., offer help for almost every class of afflicted humanity. The Children's Free Hospital, where afflicted little ones are cared for, the Kentucky Institute for the Blind, where the sightless are taught to read and write, and 51 other institutions maintained for different purposes are prepared to meet almost every form of infirmity.

The preparation of three public parks was begun 1892. Their locations were chosen with a view to variety in scenery—Cherokee park, 341 acres in the e. part of the city, an undulating surface cut into depths and heights by water-courses; Iroquois park, 710 acres in the s. part, a hilly tract 300 ft. above the city; and Shawnee park, 170 acres in the w. part, a plain on w. bank of the Ohio.

The buildings of Louisville, public and private, accord with a high architectural standard. The U. S. post-office, the Jefferson court-house, the city-hall, and the new jail are among public buildings; while the Louisville medical college, the Bamberger-Bloom store, the Courier-Journal office, the Galt House, the Commerce, the American national bank, and the Louisville trust company show what private enterprise of a public trend can do in beautifying a city. In residences Louisville has a tasteful and convenient style of its own. There are numerous

theatres and more than 50 clubs, prominent among the latter being the Pendennis and the Filson.

Church edifices number 240; some of them like the Roman. Cath. cathedral, Warren Memorial Chh., Broadway Bapt. Chh., Calvary Chh., and St. Andrew's Chh. are fine specimens of ecclesiastical architecture. The denominations represented include Roman Catholics, Baptists, Methodists, Presbyterians, Episcopalians, and lesser sects.

The banking capital is ample. In 1908 there were 9 national banks with total resources of $42,882,692.43, capital of $4,945,000, surplus of $2,271,000, and individual deposits of $15,366,204.84. There are also several state and savings banks, and trust and title companies, all in a flourishing condition.

There is a clearing-house connected with the banks, whose operations in the year ending 1907, Sept. 30, aggregated $670,752,450, an increase in a year of $30,390,140.

The assessed value of property for 1907 was about $159,610,244, on which a tax of $2.58 to the hundred was laid. The bonded debt was $7,893,900; the sinking fund was fully supplied from licenses and taxation to pay the annual interest, and to pay the debt itself when it falls due.

The city owns the waterworks, valued at over $7,000,000; several companies supply gas and electricity, and natural gas is also much used. The sewerage system is extensive and has recently been enlarged, and now is more than 100 miles in length, terminating in the Ohio river. There are also well-equipped fire and police departments.

There is no city on the continent that ranks higher in healthfulness. The death rate is less than 16 to the thousand, and the place shows little liability to epidemics or malignant diseases.

Louisville, like many other cities, originated by an incident and without definite design or foresight. Gen. George Rogers Clarke, on his way to the conquest of the Illinois country, landed his ragged militia on an island at the Falls of the Ohio, 1778, May 27, for the purpose of preventing them from deserting when he should inform them of their destination and begin disciplining them for the hard fight in prospect against fearful odds. Such stores as he could not carry with him he left on this island in charge of some families, consisting probably of 49 whites and one negro, who had come with him down the Ohio from Redstone, as immigrants to the west. These families became the founders of Louisville. In the spring of 1779 they moved to the mainland, and Apr. 17, with others who had joined them, laid out a town which they named Louisville, in honor of Louis XVI. of France, who was then helping the colonists in their rebellion against England. Gen. Clarke on his way to the Illinois country having received a letter from Col. Campbell informing

him that King Louis had espoused the American cause, not only made good use of this news among the French at Kaskaskia, but induced the few settlers at the Falls to name their town after the benefactor. The Virginia legislature incorporated the town 1780, May 1, gave it 1,000 acres of the forfeited land of Dr. John Connolly, the tory, and appointed 9 trustees for its government. The town was governed by trustees for 49 years until 1828, when the Kentucky legislature gave it a charter and lodged its governing powers in a mayor and 10 councilmen. To this first charter the people not only of Louisville, but of Kentucky, owe the first steps taken toward free education (1829). The city has greatly prospered since the adoption of this charter, although the charter itself was not of long duration. It was superseded by the charter of 1851, which added to the governing power a board of 12 instead of 10 aldermen, and increased the number of councilmen to 24. It also established the school board, the waterworks, the board of health, the board of police, the board of fire, and the sinking fund. If it had done nothing but establish the sinking fund, by which specified parts of the revenue of the city, sufficient to pay the interest of the city's debts and to pay the principal when due, it would have done well. A third charter superseded the second in 1870, but the charter which added most to the departments of the city government was that of 1892. Under this charter a score of new departments or bureaus of the city were established. All of them report to the mayor and council, but it takes them all to conduct the affairs of the city. Some of them are necessary, but others might, without serious loss or injury, be merged in those that are absolutely necessary and thus save considerable outlay for supernumerary office-holders.

The population does not appear in the U. S. census until the year 1800, and it is then wrongly given. It was probably 100 in 1780; 350 in 1790; and 600 in 1800. The U. S. census thereafter reports it as follows: (1810) 1,357; (1820) 4,012; (1830) 10,341; (1840) 21,210; (1850) 43,194; (1860) 68,033; (1870) 100,753; (1880) 123,758; (1900) 204,731; (1910) 223,928.

LOUNDER, n. *lôn'dėr* or *loun'dĕr* [Gael, *lonn*, strong, powerful]: in *Scot.*, a swinging heavy stroke; a powerful blow: V. to beat with severe strokes. LOUN'DERING. imp. LOUNDERED, pp. *lôn'dėrd.*

LOUNGE, v. *lownj* [Dut. *lunderen*, to dawdle; *leuteren*, to vacillate; to loiter: Low Ger. *lungern*, to lie abed: Bav. *lunzen*, to slumber: comp. Gael. *lunndach*, indolent]: to live lazily; to loll or move about listlessly; to spend the time in idly moving about; to recline at ease: N. an idle gait; a stroll; a place which idlers frequent; a kind of sofa. LOUNG'ING, imp.: ADJ. spending the time in loitering; reclining at ease. LOUNGED, pp. *lownjd.* LOUNGER, n. *lownj'ėr*, one who strolls or moves

lazily about; an idler. *Note.*—Skeat refers LOUNGE to OE. *lungis* and *longis*, 'a dreaming, tall, idle fellow.' This sense Littré supposes due to a pun having reference to L. *longus*, long.

LOUNSBURY, *lownz'bĕrĭ*, THOMAS RAYNESFORD, A.M., LL.D., L.H.D.: author and teacher: b. Ovid, N. Y., 1838, Jan. 1. After graduating at Yale in 1859, he was employed as a writer on *Appleton's Cyclopædia* till 1862, when he entered the army as 1st lieutenant volunteers. He was mustered out at the close of the war, and from 1870-71 was an instructor at Yale. In 1871 he was elected professor of English in Sheffield Scientific School, Yale University. He was one of the leading contributors to *The Century Dictionary*, being responsible for the department of Middle English (Chaucer). He published *History of the English Language* (1879, revised ed. 1894); *James Fenimore Cooper* in the *American Men of Letters* series (1883); *Studies in Chaucer: His Life and Writings* (3 vols., 1891); *Shakespeare as a Dramatic Artist* (1901); *Shakespeare and Voltaire* (1902); *The Standard of Pronunciation in English* (1904); *The Text of Shakespeare* (1906); etc. He also edited the complete writings of Charles Dudley Warner, with biographical sketch (1904). His life of Cooper is one of the best that has yet appeared, and an admirable specimen of literary biography, while the *Studies in Chaucer* at once took rank as an authority on that subject.

LOURDES, *lôrd:* town in s. France, capital of a canton, dept. of Hautes-Pyrénées; on the right bank of the Gave de Pau, 24 m. s.e. of Pau. The region is picturesque; the town is at the base of a bare rock about 500 ft. high, on which is a feudal castle now used as a prison. There are remarkable grottoes in the vicinity. The neighborhood is noted as producing a very valuable race of milch cows. Pop. 8,708.

The fame of the place is connected with alleged appearances of the Virgin Mary to two peasant girls, 1858, at the grotto of Massavielle, and with the miraculous cures since wrought by prayer at her shrine and by use of the waters of the fountain there. A great church reared above the grotto, was consecrated 1876 in presence of 35 cardinals and other ecclesiastical dignitaries. Many thousands of pilgrims from various countries visit the shrine at the grotto annually. The water is sold in large quantities. In many instances, at least, wonderful healing seems unquestionable; but the fact is explained on widely differing theories—by some as a supernatural gift; by others as due to the purely natural stimulus of faith and hope on susceptible temperaments, especially in diseases depending on nervous disorder. There is a large trade in rosaries and similar objects. See FAITH CURE.

LOURENZO MARQUEZ, *lô-rĕn'zō mâr-kĕs'*, or LOURENÇO MARQUES, *lô-rĕn'sō mâr-kĕs':* southernmost of the

Portuguese stations on the e. coast of Africa, and is at the head of Delagoa Bay. The place is but a mass of huts, and its site is very unhealthful; but its position and its harbor render it the natural seaward outlet of the whole Transvaal region. A railway connecting it with the head of the Transvaal has been projected: a concession was obtained from the Portuguese government 1880, but was very unpopular with the Portuguese people; and progress has been hindered by the political circumstances of the Transvaal. Pop. about 3,000.

LOUSE, n. *lows,* LICE, n. plu. *līs* [Dut. *luis;* Icel. *lūs,* plu. *lyss;* Ger. *laus,* plu. *läuse;* W. *llau,* a louse]: a small insect of different species which infests the bodies of men and animals: LOUSE, v. *lowz,* to clean from lice. LOUSING, imp. *low'zĭng.* LOUSED, pp. *lowzd.* LOUSY, a. *low'zĭ,* infested with lice; very mean; contemptible. LOUSILY, ad. *-zĭ-lĭ.* LOU'SINESS, n. *-zĭ-nĕs,* state of abounding in lice.—*Louse* (*Pediculus*), is a genus of insects, type of a very numerous family, which forms the order *Parasita* or *Anoplura.* The body is flattened, almost transparent; the segments both of the thorax and abdomen are very distinct; the mouth is small and tubular, inclosing a sucker; there are no wings; the legs are short, and are terminated by a claw adapted for taking hold of hairs or feathers. The eyes are simple, one or two on each side of the head. All the species are small, and live parasitically, on human beings, terrestrial mammalia, and birds. They deposit their eggs on hairs or feathers, to which they attach them by a glutinous substance; and they multiply with astonishing rapidity. The young cast their skin several times before they reach their maturity, which in the best known species is said to be about 18 days after they are hatched, but, from the first, they are very similar to their parents. Animals of different kinds are infested by different species of lice peculiar to them; those which are found on birds differing considerably from those of man and mammals. The same species is rarely found on different species of animals, unless very nearly allied; but some animals have more than one of these parasites. Three infest the human race; one confined to the head, the COMMON LOUSE (*P. capitis*); another, the BODY LOUSE (*P. vestimenti s. corporis*), very similar to it, but of a larger size; a third, the CRAB LOUSE (*Phthirius pubis*), sometimes found in the eyebrows, but more frequently in the pubic region, and chiefly in persons of licentious habits; having the body broader, and other characters considerably different from the other two. It has been alleged by those who desire to establish the essential diversity of certain races, that the lice found on different races of men are specifically different; but this has not been proved.

The common or head louse is a very common parasite. The symptoms which the bites of these insects produce are a troublesome itching, and a more or less apparent

eruption upon the scalp, the eruption being usually accompanied by small incrustations of blood produced by scratching of the epidermis. On examining the head, in addition to the insects, numerous eggs called *nits* are found, which are of a pyriform shape, and adhere firmly to the hairs. In six days, the young escape from the egg; at the age of 18 days, these in turn are ready to lay eggs; and the female lays 50 eggs in all; so that the rapid augmentation of these insects is easily accounted for. When only a few lice are present, they may be removed by careful combing, or may be killed by the free application of oil or pomatum to the head; but when they are abundant, the scalp should be sprinkled with the Persian insect-powder (*Pyrethrum caucaseum*), which, according to Küchenmeister, soon kills them; or rubbed with white precipitate ointment, a common remedy in some countries.

The body louse causes most irritation on those parts of the skin which correspond with the folds and seams of the clothing about the neck and round the waist where the clothes are fastened to the body. The irritation is of the same character as that caused by the preceding species, and the treatment is similar. The irritation caused by the crab louse is greater than that caused by the other species. It may be destroyed by one or two applications of an essential oil (oil of rosemary, for example), or of white precipitate ointment.

Whether the *Pediculus tabescentium*, or louse occurring in the *Lousy disease*, is or is not a distinct species, is still an open question. The fabulous element enters largely into most of the recorded cases of this disease—as, for example, when Amatus Lusitanus relates that two slaves were incessantly employed in conveying to the sea in baskets the lice which appeared on the body of their master. See PARASITES.

LOUT, n. *lowt* [Dut. *loete*, a rustic; Milan. *lotta*, a clod: Prov. *lot*, heavy, slow: comp. Gael. *luchd*, the people]: a rough, ungainly, uneducated man; a mean awkward fellow; a bumpkin. LOUTISH, a. *lowt'ĭsh*, rude; clownish. LOUT'ISHLY, ad. *-lĭ*, in a rude, clumsy, awkward manner. LOUT'ISHNESS, n, *-nĕs*, clownishness; behavior of a bumpkin.

LOUT, v. *lowt* [AS. *hlutan;* Icel. *lúta*, to stoop, to bend: prov. Dan. *lutte*, to lour, to look threatening]: in *OE.*, to stoop; to pay obeisance; to submit; to bow; to overpower; to discomfit. LOUT'ING, imp. LOUT'ED, pp.

LOUTH, *lowth:* maritime county, province of Leinster, Ireland; bounded n. by Armagh and by the Lough of Carlingford, e. by the English Channel, s. by the Boyne and county Meath, w. by Meath and Monaghan; 315 sq. m. or 202,523 acres. There is extensive tillage of wheat, barley, oats, and green crops. Linen is largely manufactured. The surface is flat, with the exception of the

range on the n., which stretches e. and w., and terminates at a height of 1,935 ft. in Carlingford Mountain, overlooking Carlingford Bay. This range consists of a granite nucleus, supporting limestone and clay-slate on its banks. The soil of the level districts is extremely fertile, and eminently suited for wheat-crops. Chief rivers are the Boyne (its boundary on the s.), the Fane, the Glyde, and the Dundalk river. Chief towns are Drogheda, Dundalk, and Ardee. Louth anciently formed portion of the territory of Oriel or Or-gial, but was occupied by De Courcy, and formed into a county by King John 1210. It was early apportioned among the military adventurers who accompanied De Courcy and De Lacy; but most of these original settlers have been displaced by later confiscations and apportionments of territory, especially after 1641 and 1690. Louth abounds with Celtic antiquities, some of which, in the neighborhood of Dundalk, are of great interest. The ecclesiastical antiquities are very striking. There are two round towers at Monaster-boyce and at Dromiskin. At Mellifont are remains of a beautiful abbey. In Drogheda, several ruined abbeys are still visible, also at Louth and Carlingford. But the most interesting relics of antiquity in Louth are the celebrated sculptured crosses of Monaster-boyce, of which the larger is 18 ft. in height. The county is in the Belfast military district, except Drogheda, which is in the Dublin district. Pop. (1901) 65,820.

LOUVAIN, *lô-vān'*, F. *lô-văng'* (Ger. *Löwen;* Flemish, *Leuven*): city of Belgium, province of Brabant, on the Dyle, 16 m. e.n.e. of Brussels. It is of large area, but it was formerly surrounded by ramparts, which have been converted into pleasant promenades, which form almost a perfect circle, diameter nearly two miles. There are many buildings of historical interest, among which are the Hôtel de Ville, one of the richest and most beautiful Gothic buildings in the world, elaborately and exquisitely decorated in every part of its exterior by sculptures of subjects taken, for the most part, from the Old Testament (restored 1842, injured by lightning 1890); the collegiate church of St. Peter, almost opposite the Hôtel de Ville, built at the end of the 14th century, an edifice of vast extent, and rich in works of art, particularly a fine 'Holy Family' by Matsys. The educational institutions are numerous; among them are the university, which has a number of American students who are studying for the priesthood, a college, an academy of fine arts, two normal schools for the training of teachers, several secondary and elementary schools. There are hospitals, homes for orphans, and other charitable institutions. It has a number of manufactories, the most important of which are the tanneries. For a general trade the town is well situated, having ample communication both by railroad and the Louvain canal. The name of Louvain first appears in history about the end of the 9th

century. It was surrounded with walls in 1115, but was afterward much enlarged. The dukes of Brabant inhabited the castle till the 13th century. At the beginning of the 14th century Louvain was the capital of Brabant, contained 200,000 inhabitants, and had an extensive and flourishing trade in the manufacture of broadcloth and all kinds of woolens. The populace, jealous of the privileges of the nobles, revolted in 1382, and being overcome by Duke Wenceslaus and subjected to severe oppression, emigrated in great numbers to England, and thus caused the decay of the town. Pop. (1901) 43,308.

LOUVER, or LOUVRE, n. *lô'vėr* [F. *l'ouvert*, the opening]: ornamental opening, often of turret or lantern shape, on a roof, to allow smoke or foul air to escape from large apartments, such as halls and kitchens. These were particularly required in ancient times, when the fire was placed in the centre of the room, and there was no chimney to carry off the smoke. They are frequently used as ornaments where not required for use, and are then glazed and made into Lanterns (q.v.). The sides of the Louver were lined with horizontal overlapped boarding, with a space between the boards, which let out the smoke without admitting the rain. Hence, this sort of boarding, frequently used for the windows of bell towers, etc., acquired the name *louver-boarding*, corrupted into *luffer-boards*. LOUVER-WINDOW, an open window, having flat cross-bars or boards so inclined as to exclude the rain.

L'OUVERTURE'. See TOUSSAINT, FRANÇOIS DOMINIQUE.

LOUVOIS, *lô-vwâ'*, FRANÇOIS MICHEL LETELLIER, Marquis DE: war-minister of Louis XIV.: 1641, Jan. 18 —1691, July 16; b. Paris. His father was chancellor and secretary of state in the war department, and purchased for him the reversion of this office. Louvois displayed great administrative ability; but his desire of power was insatiable, and he was willing to involve the whole world in the horrors of war, that he himself might be indispensable to the king. His war policy was ruthless. He caused the Palatinate to be wasted by fire and sword in 1674. For some time, he was, after the king himself, the most powerful man in France. After the death of Colbert, financial affairs came under his control, and the system of extortion and borrowing which he pursued was among the causes of the Revolution. He partially lost favor with the king by counselling him against the marriage with Madame de Maintenon; but afterward instigated the persecution of the Protestants, and involved France in the long war with the German empire, 1688-97. In 1689, with the alleged view of securing the confines of the kingdom, he again caused the Palatinate to be desolated. Madame de Maintenon directed the attention of the king to these atrocities, who thereupon forbade the

burning of Treves; but Louvois declared that, to save trouble to the king's conscience, he had already issued orders for reducing that city to ashes. The king, upon hearing this reply, seized the tongs from the chimney, and would have struck his minister with that ready weapon, if Madame de Maintenon had not stepped between. Such scenes were repeated from time to time, and the health of the vain and ambitious minister gave way. He died suddenly. Louis is said to have rejoiced at his death.—An elaborate history of Louvois' administration from original documents in the archives of the Dépôt de la Guerre, by Camille Rousset, appeared in 1861-63 (4 vols., Paris).

LOUVRE, n. *lô'vėr* [mid. L. *lupără*—from *lupus*, a wolf: mid. L. *lupārĭŭs*, a dog for hunting wolves]: one of the ancient palaces of France in Paris, at first a mere hunting-seat, probably for wolf-hunting, hence the name. The origin of its name, and the time of the erection of the oldest part of it, are unknown. It is only known that Philip Augustus, in 1214, built a fort and a state prison in this place; that Charles V., during the years 1364-80, added some embellishments to the building, and brought his library and his treasury thither. Francis I. erected that part of the palace which is now called the old Louvre. Henry IV. laid the foundation of the splendid gallery which connects the Louvre on the south side with the Tuileries; Louis XIII. erected the centre; and Louis XIV., according to the plan of the physician Perrault, the elegant façade toward the east, together with the colonnade of the Louvre, which is still the most perfect work of architecture in France. At a later period Louis XIV. chose the palace built by him at Versailles for his residence. After Napoleon had taken possession of the Tuileries he began a second gallery, opposite to the former, by which the two palaces would have been made to form a great whole, with a large quadrangular court in the centre; only 600 feet of it were completed at the time of his abdication, and it remained uncompleted till 1857, when the work, in an improved and extended form, was finished. It was greatly injured by the communists in May, 1871, the Richelieu pavilion, containing the magnificent library, being burned. The Louvre was set apart by the Convention as a museum for the national collections in science and art. It contains the museums of paintings, drawings, engravings, bronze antiques, sculptures, ancient and modern, together with special collections of antiquities, and an ethnographical collection.

LOV'AGE, *lŭv'āj* (*Ligusticum*): genus of plants of nat. ord. *Umbelliferæ*, allied to *Angelica;* the fruit elliptical, each carpel with five sharp, somewhat winged ribs, and many vittæ in the interstices.—Common Lovage (*L. officinale*, or *L. Levisticum*) is a native of s. Europe, with ternate decompound leaves, and obovate-wedge-shaped leaflets. It is sometimes cultivated in gardens,

and, notwithstanding its strong and peculiar odor, is used as a salad plant. Its roots and seeds are aromatic, acrid, and stimulant, and are used to cure flatulency and to excite perspiration. A liqueur called *Lovage* is made from them. A similar, and the only British species, is SCOTTISH LOVAGE (*L. Scoticum*), native of the sea-coasts in northern Britain: it is eaten, both raw and boiled, by the Shetlanders. The flavor is aromatic, but acrid, and nauseous to those unaccustomed to it.

LOVAT, *lō-vât:* river of Russia, rising in the Witebsk marshes, flowing through the govts. of Pskov and Novgorod into Lake Illmen; total length 267 m. It is navigable for barges of 50 tons as far up as Kholm, more than 80 m. from its mouth.

LOVAT, *lŭv'at*, SIMON FRASER, Lord: about 1676-1747, Apr. 9; second son of Thomas Fraser, fourth son of Hugh, ninth Lord Lovat. His mother was Sybilla, daughter of the chief of the Macleods. The Frasers, a family of Norman origin, had obtained Highland territories, in the county of Inverness, in the 13th century, and had established themselves as the patriarchal chiefs of the Celtic inhabitants within these territories, rather than as landlords, in the feudal acceptance of the term. The first settler—or, more probably, the first who gained renown—was named Simon, hence his descendants were called sons of Simon, or M'Shime. The descendant here under consideration had little hope of succeeding to the estate and honors, until the prospect opened to him under a settlement by his cousin, Lord Lovat. The succession was not indisputable, but until a much later period in the Highlands, influence with the clan often superseded direct hereditary descent. Simon at an early period gained their hearts. His first adventure was an effort to get forcible possession of the young sister of the late lord, who had more legal claims, as heiress to the Fraser estates. Baffled in this, he, for a reason which has defied all attempts to discover, seized on the widow of the late lord, a lady of the Athole family, and compelled her to marry him. As this was not only a crime, but an offense to a powerful family, Simon could protect himself from punishment by force only, and thus he kept up a petty rebellion for some years. On the accession of Queen Anne, when his opponents became all-powerful, he fled to the continent. He was at the bottom of the affair called the Queensbury plot, 1703, in which he professed to reveal the policy of the exiled court, and a plan for a rising in their favor among the Highlanders. On the discovery that he had hoaxed Queensbury and other statesmen, and was playing a deep game of his own, he escaped with difficulty to France. Of his manner of life there during 12 years, there are only mysterious rumors, by one of which he was reputed to have taken orders as a Roman priest. He had been outlawed for his outrages,

and another enjoyed his estates by the letter of the law; but he was still the darling of his clan, and on the breaking out of the insurrection of 1715, they sent a sort of ambassador to bring him over. What followed is remarkable, as showing that the Highlanders were led by the politics of their chiefs, not by their own prepossessions. The holder of the estates having joined the insurrection, Simon found it his interest to take the government side. His clan at once left the insurgents; and for this good service he was invested with the estate, not only by the votes of his clan, but by the law. His life, for the ensuing 30 years, was active with local intrigues calculated to strengthen his influence. In the insurrection of 1745, he tried to play a double game—sending forth his clan, under command of his son, to fight for the Pretender, and deeply plotting for that cause, while he professed to be a loyal subject. He was a special object of the vengeance of the government, and after a flight which involved many hardships, was at last arrested on an island off the w. coast, and conveyed to London. After a trial of five days he was sentenced to death, and was beheaded.

LOVE, n. *lŭv* [Ger. *lieben*, to love: Gael. *lub*, to yield, to consent: L. *libet*, it pleases; *libīdŏ*, pleasure, desire: Pol. *lubic*, to have an inclination for: Russ. *liôbit'*, to love; *lobzat'*, to kiss:] an affection of the mind excited by qualities in an object which are capable of communicating pleasure; the passion of the sexes; courtship; the object beloved; good-will; benevolence; strong liking or inclination; fondness; tenderness or regard; dutiful reverence to God: V. to delight or take pleasure in an object; to regard with strong and tender affection, as that of one sex for the other; to regard with parental tenderness; to regard with good-will or benevolence; to be pleased with; to like. LOV'ING, imp.: ADJ. fond; affectionate; expressing love or kindness. LOVED, pp. *lŭvd:* ADJ. possessing the affection of any one. LOVER, n. *lŭv'ĕr*, one who loves. LOVABLE, a. *lŭv'ă-bl*, worthy of love; amiable; that may be loved. LOVE'LESS, a. *-lĕs*, without love; without tenderness; destitute of kindness. LOVELY, a. *lŭv'lĭ*, possessing qualities that excite love, admiration, or esteem; amiable; beautiful; delightful. LOVE'LILY, ad. *-lĭ-lĭ*, in a loving manner. LOVE'LINESS, n. *-lĭ-nĕs*, possession of qualities that excite love. LOV'INGLY, ad. *-lĭ*, affectionately; with kindness. LOV'INGNESS, n. *-nĕs*, kindness; affection. LOVING-KINDNESS, tender regard; mercy; favor. LOVE-APPLE, a vegetable, also called *tomato* (see TOMATO). LOVE-CHARM, a supposed charm by which love may be excited. LOVE-FAVOR, something given that may be worn in token of love. LOVE-FEAST, among Wesleyan Methodists, a religious repast held quarterly, modelled on the Agapæ which the primitive Christians held usually in connection with some solemn festival, e.g., before the communion. Strictly, none but members of the church should be pres-

ent. The feast is held at the quarterly conference: after scripture-reading, with singing and prayer, bread and water are distributed to all, and a report concerning the church and its members is made by the pastor. Some Bapt. mission-churches in Europe hold love-feasts, a combination of church-sociable and devotional meeting. For Moravian love-feast, and in general, see AGAPÆ. LOVE-KNOT, a complicated figure by which an interchange of affection is supposed to be figured. LOVE-LETTER, a letter written in courtship. LOVE-LOCK, a particular sort of curl worn by men of fashion in the reigns of Elizabeth and James I., on the temples. LOVE-LORN [*love*, and OE. *lorn*, lost]: forsaken by one's love. LOVE-MAKING, courtship. LOVE-SICK, languishing from love. LOVE-SPELL, a love-charm. LOVE-TOKEN, a present in token of love. LOVE-LIES-BLEEDING, a flower, a kind of amaranth; the *Amaran'thus caudātŭs*, ord. *Amaranthācĕæ*. LOVE-POTION, formerly, a compounded draught administered to excite feelings of love. IN LOVE, filled with affection or desire, as for the possession of an object.—SYN. of 'love, n.': affection; concord; delight; pleasure; kindness; friendship; tenderness; devotion; charity;—of 'lovely': pleasing; handsome; pretty; fine; charming; delectable; enchanting.

LOVE-BIRD (*Psittacula*): genus of birds of the parrot family (*Psittacidæ*), a group of beautiful and very small species, natives of the warm parts of America, of Africa, and Australia. They receive their name from the affection which they manifest toward one another, whether in a wild state or in a cage. An Australian species, about the size of a sparrow, is now common as a cage-bird everywhere. They are lively birds, and fond of being caressed. They feed on the seeds, etc., on which canaries are fed, and are very fond of chickweed and other plants, with seeds ripe or nearly so.—Anatomically, this genus is remarkable in the parrot tribe for having no *furcula* (merrythought bone).

LOVEJOY, *lŭv'joy*, ELIJAH PARISH: reformer and martyr: 1802-37; b. Albion, Me. He graduated at Waterville College 1826; was teacher at St. Louis, Mo.; then political editor; studied theology at Princeton Seminary, and was ordained Presb. minister 1833. He then became editor in St. Louis of a religious paper, *The Observer*. Lovejoy, though not claiming to be of the company known as Abolitionists, was conscientiously opposed to slavery and was zealous for the liberty of the press. When, 1836, a negro prisoner was taken from the jail in St. Louis by a mob and was chained to a tree and burned to death—and when the judge charged the grand jury called to indict the perpetrators of the crime, to the effect that the participators in such a murder are absolved from guilt if the mob were impelled by a 'mysterious, metaphysical, and almost electric frenzy'—Lovejoy's strictures on the charge led to the destruction of

The Observer office by a mob. He removed to Alton, Ill.; but his press was demolished by lawless men as soon as it was landed there. Some citizens reimbursed him, and he procured another press; but, 1837, a mob destroyed his press and types. Another press which was brought was broken into fragments before it could be set up, and was thrown into the Mississippi. The law-abiding citizens of Illinois rallied, and in a convention at Upper Alton, demanded, in the name of human rights and of the liberty of the press, that the press of *The Observer* should be re-established at Alton. At a public meeting called to consider whether the publication of the paper should be permitted there, Lovejoy made a noble and powerful address, declaring that, obeying his conscience and in the fear of God, he was not able to evade his plain duty by abandoning the contest for human rights under the laws that guarantee liberty of speech in this republic. This address seemed for a time to produce some effect; but when another press arrived the mob gathered, with threats, and it was not taken to the office, but stored in a warehouse, the mayor superintending. Here, Lovejoy, with 12 or 15 friends, armed, undertook to watch it through the night. About midnight, a mob attacked the warehouse, broke in the windows, fired several shots, and then prepared to burn the building. The mayor appeared as the mob's messenger, to say that if Lovejoy and his friends would surrender the press they should be allowed to go uninjured. This was rejected, and the building was fired, with the order given outside, 'Shoot every abolitionist as he leaves.' Then there was further firing of guns, in which—this time—some of the defenders took part. Lovejoy, stepping outside—the roof being on fire—to take part in defending the building, was shot from behind a pile of lumber, and died almost instantly.—The tragic event caused much excitement in the country, but, strange as it now seems, there were multitudes, and some high in public station, who denounced Lovejoy as having met a fitting end. The grave of the martyr to the freedom of the press was unmarked for many years. A monument now commemorates this sacrifice to liberty.

LOVE'JOY, Owen: 1811-64; b. Albion, Me.; brother of Elijah Parish Lovejoy (q.v.). He graduated at Bowdoin College. A witness to his brother's murder, he knelt at his grave and vowed undying hostility to slavery. A year after the tragedy, he became pastor of the Congl. Church, Princeton, Ill.; and 1856 he was elected to congress. In public and private life he made good his vow; against fierce threats, and repeatedly in peril of assassination, aiding, and protesting his purpose to aid, in the escape of every slave that came to him for help.

LOVE'LACE, Francis: American colonial governor: b. Hurley, Berkshire, England, about 1618; d. England about 1675. He was a younger son of the first Baron Lovelace, and in 1668 succeeded Richard Nicolls as gov-

ernor of New York. He oppressed the inhabitants by heavy taxation, and became very unpopular. During his temporary absence from the town the Dutch fleet ap peared in the harbor and the citizens speedily surrendered.

LOVELACE, RICHARD: English lyrical poet: b. Woolwich, Kent, 1618; d. London 1658. He was educated at Oxford, entered the army, and became a captain. He spent his fortune in support of the royal cause, and after entering into the French service, in 1648, returned to England, and was imprisoned until the king's death. His destitute condition at this time is in marked contrast to accounts of his handsome person and splendid appearance earlier in life. He died in great poverty. His poems, which are light and elegant, were published in 1659 under the title of *Lucasta.* The best known of his lyrics are *To Althea, from Prison,* and *To Lucasta, on Going to the Wars.* Lovelace, who for spirit and gallantry has been compared to Sir Philip Sidney, also wrote *The Scholar,* a comedy; and *The Soldier,* a tragedy.

LOVELL, *lŭv'ĕl,* JAMES: 1737-1814; b. Boston; son of John Lovell (1710-88, master of the Boston Latin School). Lovell, after graduating at Harvard, 1756, was usher in the school under his father. After the battle of Bunker Hill, Gen. Gage, British commander, imprisoned him for a time. He was in the continental congress 1776-82; collector of the port of Boston 1788-89; naval officer from 1790. He died in Windham, Me.

LOV'ELL, JAMES: 1758-1850: Revolutionary officer. He graduated at Harvard 1776; became adjutant in a Mass. regiment, and afterward in Lee's famous Legion in the campaign in the southern states. He was conspicuous in many battles, and died at St. Matthews, S. Carolina.

LOVER, *lŭv'ĕr,* SAMUEL: artist, novelist, and songwriter: 1797-1868, July 6; b. Dublin; son of a stockbroker. At an early age, he showed great desire to become an artist, and with genius and perseverance, succeeded so far that, 1828, he was elected a member of the Royal Hibernian Soc. of Arts. In 1833, he exhibited at the Royal Acad. a portrait of Paganini, which brought him some reputation as a portrait-painter. As a miniature-painter, in Dublin, he took likenesses of the principal aristocracy and leaders of Irish society. In 1832, he published a collection of short pieces, *Legends and Stories of Ireland, with six Etchings by the Author,* which was favorably received, and followed by a second series 1834. In 1837, Lover settled in London, and contributed largely to periodical literature. He also wrote *Rory O'More,* a romance of Irish life, which immediately became popular, and was produced on the stage. His next publication was *Handy Andy,* completed, with illustrations by the author, 1842. In 1844, Lover published *Treasure Trove, with Illustrations by the Author.* As a

writer of songs, Lover holds a well-earned reputation; his *Rory O'More, Molly Bawn, Low-backed Car, Angel's Whisper,* and others, have long been established favorites with the public. Lover published *Metrical Tales, and Other Poems,* in 1860; and edited a compilation of *Lyrics of Ireland.* In 1844, Lover projected an entertainment called 'Irish Evenings,' which was very popular in London, the provinces, and the United States. Lover was for some years in receipt of a pension from the crown. See his life by Bayle Bernard (1874).

LOVE'WELL, JOHN: b. N. H., toward the end of the 17th c.; d. 1725; son of John Lovewell, who was ensign in Cromwell's army and lived to an extraordinary age. In the last year of Lovewell's life he was capt. of volunteers in several successful expeditions against the Indians, in one of which—against the Indian chief Paugus—he was killed. The scene of the battle was near Lovewell's pond, which was named in memory of him. See *Expedition of Captain Lovewell,* by F. Kidder (1865).

LOW, a. *lō* [Icel. *lagr,* short, low: Sw. *log;* Dut. *laag,* low]: not high or elevated; placed below in relation to another thing; not rising to the usual level, height, or standard; shallow; descending far downward; below the usual rate, price, or value; soft; not loud or noisy; mean or humble in rank; reduced; dejected or depressed; humble; vulgar; unrefined; mean; dishonorable; in *OE.,* impotent; subdued: ADJ. not on high; near the ground; under the usual price or value; in a mean or degraded state; softly; down in position or circumstances. LOW'ER, a. *-ėr,* compar. of *low;* less high or elevated. LOW'EST, a. *-ĕst,* superl. of *low;* least high or elevated. LOW'LY, a. *-lĭ,* humble; free from pride; meek; mild; not high or exalted: AD. in a low condition; humbly; meekly. LOW'LINESS, n. *-lĭ-nĕs,* freedom from pride; humility. LOW'NESS, n. *-nĕs,* state of being low; meanness of condition or character; depression, as of mind, spirits, strength, or intensity. LOW-BORN, born in humble life. LOW CHURCH, applied to the party in the Church of England which does not assert Episcopacy to be the only form of church government, or attach the same value or importance to the sacraments as the High Church party—opposed to HIGH CHURCH. LOW LATITUDES, see under LATITUDE. LOW LIFE, life among the poorer classes of a country. LOW-MINDED, mean in mind or disposition. LOW WATER, lowest point of the tide at ebb. LOW-WATER MARK, the lowest point to which the tide recedes. LOW-PRESSURE, applied to the condensing steam-engine. LOW-SPIRITED, dejected; depressed; wanting in liveliness. LOW SUNDAY, the Sunday next after Easter. LOW-WINES, the first run of the still; the first liquor produced by distilling molasses or fermented liquors. LOWER-CASE, among *printers,* the case which contains the small letters of the alphabet. LOWER EMPIRE, the *Roman* or *Western* Empire, as distin-

guished from the *Eastern or Byzantine*, which names existed from the date of the removal of the seat of empire to Constantinople A.D. 325, to its destruction by the Turks 1453. LOW-LEVEL GRAVELS, in *geol.*, a term applied to the sands and gravels that occur in the lower terraces of valleys, in contradistinction to the high-level gravels. LOW-POTENTIAL SYSTEM, in electric distribution, a system of conductors, generators, and translating devices in which the pressure or voltage is relatively low. Specifically, an electric distributing system, which, according to fire insurance rules, has within it a pressure less than 550 volts and more than 10 volts. LOW-SPEED ENGINE, one in which the piston speed is less than 600 feet per minute. *Note.*—LOW SUNDAY is said by some to have been so named, (1) because there is a return to the ordinary church service which has less ritual in it; (2) because anciently parts of the solemnities of Easter-day were retained, being thus a feast-day, but of a *lower* degree; (3) that it is a mere corruption of L. *Laudēs*, the first word of the Sequence for the day, beginning with the words, *Laudēs Salvatōrī vōcĕ modulēmur supplĭcī*, 'Praises to the Savior let us sing with suppliant voice.' The last is the most probable.—SYN. of 'low, a.': depressed; deep; dejected; abject; submissive; reverent; dissolute; base; grave; modern; grovelling; feeble; weak; moderate; impoverished; reasonable; plain; simple.

LOW, v. *lō* [an imitative word: AS. *hlowan;* Dut. *loeien;* Ger. *luien*, to low: O.H.G. *hlójan*, to low]: to bellow as an ox or cow. LOW'ING, imp. ADJ. uttering sounds as cattle: N. the sounds uttered by cattle. LOWED, pp. *lōd.*

LOW, or LOWE, n. *lō*, in Scot. *low* [Icel. *logi*, flame; *loga*, to flame: Ger. *lohe*, flame: Dan. *laage*]: in *prov. Eng.* and *Scot.*, flame; glow; fire: V. to flame; to flame with rage. LOW-BELL, n. *lō'bĕl* [*low*, and *bell*]: nightfowling, in which a bell and lights are used: V. to scare as with a low-bell.

LOW, *lō*, A. MAURICE: American journalist: b. London, England, 1860. He was educated at King's College, London, and in Austria, and since 1886 has been in charge of the Washington department of the Boston *Globe*. He is also the principal American correspondent of the London *Chronicle*. He has published *The Supreme Surrender* (1901); *Protection in the United States* (1904); *American Life in Town and Country* (1905); *A Short History of Labor Legislation in Great Britain* (1907); etc.

LOW, CHARLES RATHBONE: English historian and naval officer: b. Dublin, Ireland, 1837, Oct. 30. He went to sea in 1853 and has served in Asiatic and African waters. He is a fellow of the Royal Geographical Society and a lieutenant in the Indian navy, and has published *Tales of Old Ocean* (1860); *Land of the Sun* (1870);

History of the British Navy (1872); *History of the Indian Navy* (1877); *History of Maritime Discovery* (1881); *Her Majesty's Navy* (1892); *Britannia's Bulwarks* (1895); *The Epic of Olypmpas* (1897); *The Olympiad* (1903); etc.

LOW, SAMPSON: English publisher: b. London 1797; d. 1886. He became manager in 1837 of a trade journal styled *The Publisher's Circular*, on which his *British Catalogue* was afterward based. He established the publishing house of Sampson Low & Co., in 1848. His various compilations include *Index to Current Literature* (1859-60); *Low's Literary Almanac* (1873); etc.

LOW, SETH, LL.D.: b. Brooklyn, N. Y., 1850, Jan. 18; son of Abiel A. Low. He studied at Columbia College, New York, graduating 1870; and after a foreign tour entered the commercial house established by his father in New York. He was admitted to the firm 1875. He led a reform movement in local politics, and 1881 was elected mayor of Brooklyn, and was re-elected 1883—giving the city a government free from corruption, sternly unpartisan, and with all departments held to close accountability. He has been interested in movements for social elevation, and has been an active Christian worker in connection with St. Ann's Church. In 1889, he was chosen to succeed Dr. Barnard, deceased, as president of Columbia College, and entered auspiciously on that office, in which he had notable success until his resignation in 1891. The library building of Columbia Univ. was his gift at a cost of a million dollars. In 1897 he was defeated for mayor of the enlarged New York, on a nonpartisan ticket; but in 1901 was elected on a fusion ticket. His administration of the next two years led to a reduction of the taxes, sweeping reforms in the police department, and an enlargement of the public school system, and showed a strict adherence to the principles of business-like administration of public affairs which characterized his Brooklyn mayoralty. In 1903 he was again fusion candidate for mayor, but was defeated, a defeat generally attributed not to any serious mistakes or faults in his administrations, but rather to party questions and complications.

LOW, WILL HICOCK: American painter: b. Albany, N. Y., 1853, May 31. He learned painting at Paris under Gérôme and Carolus-Duran (1873-7), and since 1890 has been Academician of the National Academy of Design, and is one of the founders of the Society of American Artists. He is classed among the most active and versatile of living American artists, and has been alike successful in decorative wall paintings, stained glass (at which he worked with John La Farge, q.v.), portrait and book illustration in black and white. His strength as a designer and colorist has been recognized by the public awards made to his work and by the demand for his

services on the part of private and public patrons and connoisseurs. He has also had charge of life classes in the schools of Cooper Union, and the National Academy of Design. The following are some of his best known pictures: *Portrait of Albani* (1877); *Chloe* (1882); *My Lady* (Lotus Club, New York); *Aurora* (1894); *Homage to Venus* (mural painting, Waldorf-Astoria, New York).

LOW ARCHIPEL'AGO, or PAUMOTA ISLANDS, *pow-mō'ta:* group of about 80 small coral islands, eastward of the Society Islands, about long. 136°.

LOW COUNTRIES: See NETHERLANDS.

LOWE, *lō*, SIR HUDSON: 1769, July 28—1843, Jan. 10; b. Galway, Ireland. He entered the army, and served in Corsica, at Lisbon, and Minorca. He commanded in the island of Capri, while he surrendered to the French 1808, Oct. 16; later, he served in Germany under Blücher. 1815, Aug. 23, Lowe was appointed governor of St. Helena, with the rank of lieutenant-general, having in charge the safe-keeping of Napoleon Bonaparte. He arrived in St. Helena 1816, Apr. 14, Napoleon having been landed there Oct. 17 of the previous year. The situation involved a heavy amount of private care, and public responsibility, and inevitable public obloquy. Relaxation of vigilance for a single hour might have resulted in another European war; while the due exercise of vigilance entailed on him every kind of annoyance which the peevish and irritable captive had it in his power to give. On the death of Bonaparte, Lowe returned to England, where his eminent services met ungrateful return. In 1825, he was appointed military commander in Ceylon. He died in London in poverty. Consult: Forsyth, *Captivity of Napoleon at Saint Helena from Letters and Journals of Sir Hudson Lowe* (1853); Seaton, *Sir Hudson Lowe and Napoleon* (1898); Lord Rosebery, *Napoleon, the Last Phase* (1900).

LOWE, JOHN: American rear-admiral: b. Liverpool, England, 1838, Dec. 11. He was educated in his native city and Columbus, Ohio, and entered the American navy in 1861. He served through the Civil War and accompanied the Greely Relief Expedition in 1884. He was the first naval officer of any nation to serve in a submarine torpedo-boat. This he did in 1898. He was promoted rear-admiral, 1900, Dec. 11, and retired the same day. Since his retirement he has participated in an experiment with a submarine torpedo-boat, remaining submerged for 15 hours.

LOWE, MARTHA ANN PERRY: American verse writer: b. Keene, N. H., 1829; d. Somerville, Mass., 1902. She published *The Olive and the Pine* (1859); *Love in Spain, and Other Poems* (1867); *The Story of Chief Joseph* (1881); *Bessie Gray;* etc.

LOWE, Right Honorable ROBERT (Viscount SHERBROOKE), 1811, Dec.—1891, Sep. 12: English statesman:

b. Bingham, Notts, of which parish his father was rector. He was educated at Winchester, and University College, Oxford; was called to the bar 1836, and, emigrating to Australia 1842, soon gained repute at the Sydney bar, and as a political leader. He returned to England 1850; was elected to parliament 1852 for Kidderminster as an independent member with conservative tendencies; took office under Lord Aberdeen 1853, and under Lord Palmerston 1855. In 1859, he was returned for the borough of Calne; and he represented the London Univ. from 1868 till he went to the upper house. In 1859, he became virtual minister for education in Lord Palmerston's second administration, resigning 1864. He largely contributed to insure the rejection of the Whig Reform Bill 1866. He was, with other 'Adullamites,' offered a post in the Derby government, but declined to leave the liberal party, though protesting himself an outcast from it. In 1867, Lowe was still an opponent of all reduction of the suffrage. In 1868, Lowe's difference with the liberal party was forgotten, in his strenuous aid to the liberal leaders in disestablishment of the Irish Church. Accordingly, he obtained in Gladstone's liberal ministry the office of chancellor of the exchequer; exchanging it 1873 for that of home secretary. In acuteness, and cogency of argument, in originality and daring, Lowe was scarcely equalled among public speakers of his day. Lowe was raised to the peerage 1880.

LOWE, Thaddeus S. C.: American inventor and scientist: b. Jefferson, N. H., 1832, Aug. 20. He constructed balloons in 1856 and 1858-9 in order to study atmospheric phenomena, and during the Civil War was chief of the aeronautic corps. He devised a system of signaling in 1862, and valuable instruments for atmospheric investigation, etc., constructed and operated the largest aerostat ever built, invented a compressed ice machine and made the first artificial ice in the United States (1865); and established the Lowe Observatory in the Sierra Madre Mountains, Cal. Since 1897 he has been experimenting with a new system of coke ovens.

LOWELL, *lō'el:* city in Mass., Middlesex co., on the Merrimac and Concord rivers, 25 m. n.w. of Boston; on the New York, New Haven & Hartford and Boston & Maine railroads. It was laid out 1821; incorporated as a borough 1826, and its name changed from East Chelmsford to Lowell in honor of Francis Cabot Lowell (q.v.), who before his death, 1817, supplied the original plans from which it was developed. It was incorporated as a town in 1826 and chartered as a city 1836. Lowell is one of the chief manufacturing cities in the United States, and is sometimes called the 'Manchester of America'; its principal manufactures are cotton and woolen goods, prints, carpets, etc. Its water-power is mainly from the Pawtucket Falls in the Merrimac river. The water-power of the Concord river is also used to

some extent. Owing to the high price of coal in Lowell, water-power is most extensively used, but steam has also come into use, and some of the larger factories which regularly use water have steam power equipment for use in case of emergency. The first cotton mill was built in 1823; the Hamilton Company, organized in 1824, was the first to use the power loom in the manufacture of twilled and fancy goods, and first to manufacture cotton drills. The Lowell Manufacturing Company incorporated in 1828, ran 70 carpet looms in addition to their cotton manufactures, and were first to make carpets by their power looms. The manufacture of knit hose and shirts was begun in Lowell in 1837; and fancy wool fabrics were first manufactured by power looms in 1840. In 1900 there were 981 manufacturing establishments, employing $46,578,193 capital and 31,377 persons; paying $11,821,633 for wages and $21,132,505 for materials; and yielding products valued at $44,774,525. Of the combined capital of over $46,000,000, nearly half—$21,354,927—was invested in the manufacture of cotton goods; and this was concentrated under the control of eight establishments, employing 13,730 wage earners. Large capital is also invested in foundries and machine shops, woolen mills, hosiery and knit goods factories, and leather manufactures. The mills produce prints, drillings, cotton sheetings and shirtings, ingrain, Brussels, and Wilton carpets as beautiful and durable as the best European make; serges, flannels, cassimeres, and beavers, cotton and merino hosiery, etc. With the larger manufactories are connected many others for making machinery, boilers, edge tools, files, screws, bobbins, pumps, hydraulic presses, chemicals, leather, elastic, and wire goods, paper, cartridges, carriages, hair felt, doors, sashes, blinds, etc. In the early days of the Lowell industries the employees were mostly of American birth, and they published for many years a periodical of considerable merit, *The Lowell Offering*, probably the only publication of the kind in the world, some of the women contributors to which have taken good rank in American literature. The Lowell Textile School, established by representatives of the large manufacturers, is devoted entirely to technical instruction in the work of the textile industries, and receives appropriation from the state. Two young men of Lowell —Luther C. Ladd and A. O. Whitney—were the first to shed their blood for the Union in the Civil War, being killed by the mob while marching to the defense of Washington through Baltimore with their regt., 6th Mass. vols., 1861, Apr. 19. A granite monument to their memory stands in one of the public squares, of which there are several in Lowell. The city is regularly laid out, well paved, drained, and lighted. There is an excellent system of street railroads, and trolley connection with Boston and other cities of eastern Massachusetts. Pure water in abundance is supplied by the city waterworks, constructed

1873, at a cost of about $2,875,000; there is a well organized and equipped fire department, and a good police force. The city, divided into wards, is governed by a mayor, common council, and board of aldermen. It contains the county courthouse, prison, and almshouse; and numerous hospitals and charitable institutions, including the Lowell Hospital, the Lowell General Hospital, St. John's Hospital, St. Peter's Orphanage, the Theodore Edson Orphanage, the Ayer Home for Young Women and Children, Old Ladies' Home, and St. Patrick's Home for Working Women. It has over 30 churches representing all denominations, of which the strongest are the Roman Catholics, the Congregationalists, the Methodists, and the Baptists. Two of the Roman Catholic churches, St. Patrick's and the Immaculate Conception, are among the handsomest in the state. Lowell has excellent public schools, in which manual training is part of the curriculum, and which include a system of evening schools. There is a high school, founded in 1831, and also an evening high school. In addition, Lowell is the seat of the State Normal School and of several private schools, including the Textile School already mentioned, the Rogers Hall School, and St. Patrick's Academy. There are 6 national banks, with total resources of $9,912,616, capital of $1,600,000, surplus and profits of $813,728, and individual deposits of $6,072,035. The 6 savings banks have combined assets of over $24,000,000 and deposits of nearly $22,500,000. The two trust companies have combined assets of over $2,200,000, capital stock of $225,000, and deposits of about $1,825,000. The net public debt of the city (1907) was $2,851,814, and the assessed valuation of property $75,445,738. Pop. (1900) 94,969; (1910) 106,294.

LOWELL, *lō'ĕl*, ABBOTT LAWRENCE: American educator and author: b. Boston 1856, Dec. 13. He was graduated from Harvard in 1877, from the law school of the university in 1880, was a legal practitioner in Boston in 1880-97, and from 1897 to 1899 was a lecturer at Harvard. In 1900 he was appointed there to the chair of the science of government. Among his works are *Essays on Government* (1889); *Governments and Parties in Continental Europe* (1896), the only work of the sort in English, and a most careful and valuable explanation of the governmental machinery of European states; *Colonial Civil Service* (1900); *The Influence of Party Upon Legislation in England and America* (1902); etc.

LOWELL, CHARLES: American clergyman: b. Boston 1782, Aug. 15; d. Cambridge 1861, Jan. 20. He was a son of John Lowell (1743-1802). He was graduated from Harvard in 1800, studied theology at Edinburgh, Scotland, and from 1906, Jan. 1, until his death, was pastor of the West (Unitarian) Church of Boston. His ill-health caused his absence in Europe and the East

(1837-40), and in his later years his place in the pulpit was largely taken by his colleague, Cyrus A. Bartol. He was an able orator and of strong anti-slavery views. A founder and member of the Society of Northern Antiquarians of Copenhagen, he was also secretary of the Massachusetts Historical Society and a corresponding member of the Archæological Society of Athens. Among his published writings are *Meditations for the Afflicted, Sick, and Dying; Devotional Exercises for Communicants; Occasional Sermons; Practical Sermons* (1855).

LOWELL, Charles Russell: soldier: 1835, Jan. 2—1864, Oct. 20; b. Boston: son of Charles Lowell, D.D. He graduated at Harvard 1854; spent several years in European travel and study; engaged in business on his return to the United States; and entered the Union army as capt. 6th U. S. cav. 1861, May 14. He served through the Peninsular campaign with his company, and in n. Va. and Md. on the staff of Gen. McClellan; organized the 2d Mass. cavalry, and was appointed its colonel 1863, Apr. 15; commanded a brigade of cavalry in Virginia; served with Gen. Sheridan in the Shenandoah valley; and received fatal wounds in the battle of Cedar Creek. He was promoted brigadier-general of volunteers 1864, Oct. 19, the day of the battle, and died from his wounds the following day.

LOW'ELL, Edward Jackson: author: 1845, Oct. 18—1894, May 11; b. Boston: grandson of Francis Cabot Lowell (q.v.). He was graduated from Harvard in 1867, was admitted to the Suffolk County bar in June, 1872, for a time practised law in Boston, but subsequently devoted himself exclusively to literary work. He was a member of the Massachusetts Historical Society and a fellow of the American Academy of Arts and Sciences. Among his writings are *The Hessians and the Other German Auxiliaries of Great Britain in the Revolutionary War* (1884), recognized as standard; *The Eve of the French Revolution* (1892); and the section on "The Diplomacy and Finance of the Revolution" in Winsor's *Narrative and Critical History of America* (1884-9).

LOW'ELL, Francis Cabot: manufacturer: 1755, Apr. 7—1817, Aug. 10; b. Newburyport, Mass.; son of John Lowell (1743-1802). He graduated at Harvard College 1793, 1810-13 studied the manufacture of cotton goods in England, and on his return established the first cotton factory in the United States at Waltham, Mass., in conjunction with Patrick T. Jackson, his brother-in-law. In 1816 he secured the adoption of a clause of the tariff act that imposed a duty on imported cotton fabrics. He also founded the city that after his death was named in his honor, Lowell.—His son, John Lowell (1799-1836), was educated at Harvard and Edinburgh Univ.; made high literary attainments; and died at Bombay, India. He left a bequest of $250,000 to found in Boston the 'Lowell

Institute,' which provides an annual course of free lectures by eminent men on important themes.

LOW'ELL, JAMES RUSSELL, LL.D., D.C.L.: poet: 1819, Feb. 22—1891, Aug. 12; b. Cambridge, Mass.; son of Charles Lowell, D.D. (1782-1861). He graduated at Harvard 1838, and at its law school 1840; at once began practicing law in Boston; but within a few months abandoned law and applied himself to literature. In 1843 he began contributing poems to the *Anti-Slavery Standard*, of which he became corresponding editor 1848, and subsequently contributed to the *Boston Courier*, in which the first series of his celebrated *Biglow Papers* appeared 1846-48. While strongly aiding the anti-slavery movement, he undertook the editorship in conjunction with Robert Carter of a purely literary publication, *The Pioneer, a Literary and Critical Magazine*, 1843; but though some of the most eminent writers of the day contributed to the publication, it lasted only three months. In 1851, he made a prolonged tour of England, France, Switzerland, and Italy; 1854-55 delivered a course of lectures on the British poets before the Lowell Institute, Boston; 1855, Jan., succeeded Henry Wadsworth Longfellow as prof. of modern languages and belles-lettres in Harvard College; 1855-57 studied abroad to qualify himself for that office; and 1857 entered on the discharge of his new duty. In the latter year he also became editor of the newly-founded *Atlantic Monthly*, and held the office till 1863, when he became joint editor with Prof. Charles Eliot Norton of the *North American Review*, with which he was connected till 1872. To these publications he contributed some of his choicest essays and miscellaneous writings, and to the first the second series of his *Biglow Papers*. He made a second tour of Europe 1872-74, during which he received the degrees LL.D., from the Univ. of Cambridge, and D.C.L., from the Univ. of Oxford, England. In 1876 he was a republican presidential elector; 1877 was appointed by Pres. Hayes U. S. minister to Spain; 1880 was transferred to the court of St. James; and 1885 delivered an address at the unveiling of the bust of Coleridge in Westminster Abbey, and terminated his official residence in Great Britain. He resumed his lectures at Harvard, gave a course on the English dramatists before the Lowell Institute, and made a brief visit to England 1887. At the centennial of the inauguration of President Washington in New York, 1889, Apr., he responded to the toast *Our Literature*.

Lowell's prose is affluent in thought and faultless in literary form. His lighter verse is rich in humor and fertile in apt illustrations. His more serious poetry has been criticised as giving an impression of lack of spontaneousness through elaboration of thought. His publications include *Class Poem* (1838); *A Year's Life* (1841); *Poems* (1844); *The Vision of Sir Launfal* (1845-48); *Conversations of Some of the Old Poets*

(1845); *Poems* (1848); *The Biglow Papers* (1848); *A Fable for Critics* (1848); *Poetical Works*, 2 vols. (1858); *Mason and Slidell, a Yankee Idyl* (1862); *Fireside Travels* (1864); *Ode at the Commemoration of the Living and Dead Soldiers of Harvard University*, 1865, July 21; *The Biglow Papers*, 2d series (1867); *Under the Willows, and Other Poems* (1869); *Among My Books* (1870); *Three Memorial Poems* (1876); *Among My Books*, 2d series (1876); and *Democracy, and Other Addresses* (1887). Consult: Lowell's *Letters*, edited by C. E. Norton (1894); Underwood, *Lowell, a Biographical Study* (1893); Scudder, *James Russell Lowell, a Biography* (1901); Hale, *James Russell Lowell and His Friends* (1899); E. E. Hale, Jr., *Lowell* in *Beacon Biographies*, Wendell, *Literary History of America* (1900).

LOW'ELL, JOHN, LL.D.: 1743, June 17—1802, May 6; b. Newburyport, Mass.: lawyer. He graduated at Harvard 1760, was admitted to the bar 1762, served in the provincial assembly 1775, settled in Boston 1777, and was a member of the legislature of 1778, and delegate to the constitutional convention 1780. In the latter body he was a member of the committee that drafted the constitution, and was author of the clause by which slavery was abolished in Mass. In 1782-83 he was a member of the continental congress; 1783-89 judge of the court of appeals; 1789-1801 judge of the U. S. district court; and 1801-2 judge of the U. S. circuit court. He received the degree LL.D. from Harvard 1792.

LOWELL, JOHN: American publicist: b. Newburyport, Mass., 1769, Oct. 6; d. Roxbury, Mass., 1840, Mar. 12. He was a son of John Lowell (1743-1802) (q.v.). He was graduated from Harvard in 1786, studied law, was admitted to the bar in 1789, retired from practice in 1803, and after travel in the East (1803-6) devoted his attention to literature. He wrote on agriculture and theology, but chiefly on politics. In various publications he attacked the War of 1812; and by his pen made himself a valuable aid of the Federalists. His interest in horticulture obtained for him the sobriquet of 'The Columella of the New England States'; and he was the first in the United States to build extensive greenhouses on a scientific plan. For many years he was president of the Massachusetts Agricultural Society. Among his pamphlets were *Peace Without Dishonor, War Without Hope* (1807); *Diplomatic Policy of Mr. Madison Unveiled* (1810); *Candid Comparison of the Washington and Jefferson Administrations* (1810); and *Mr. Madison's War* (1812).

LOWELL, JOHN: American merchant and philanthropist; b. Boston, Mass., 1799, May 11; d. Bombay, India, 1836, Mar. 4. He was the son of F. C. Lowell (1775-1817) (q.v.). He studied at Harvard (1813-15), became a successful merchant in Boston, was several times elected

to the Boston common council and the state legislature of Massachusetts, and collected a large and valuable library. After 1830 he passed a large part of his time in travel in foreign lands. By the gift of about $250,000—then the largest ever made in America by an individual for the endowment of a literary institution, with the exception of Girard's bequest for Girard College—he established in Boston the Lowell Institute, to consist of regular annual courses of free public lectures. The institute was opened in the winter of 1839-40, and has proved exceedingly successful. Consult: Everett, *Memoir of John Lowell, Jr.* (1840); and Smith, *History of the Lowell Institute* (1898).

LOW'ELL, Josephine (Shaw): philanthropist: b. W. Roxbury, Mass., 1843, Dec. 16; d. N. Y. City 1905, Oct. 12; daughter of Francis George Shaw and widow of Gen. Charles Russell Lowell. She received a liberal education in the United States and Europe, spent 1851-55 in foreign travel, married Gen. Lowell 1863, and after his death was engaged in philanthropic work in N. Y. state and city. In 1873 she was appointed by the governor a member of the N. Y. state board of charities and correction, being the first and for a long time the only woman to serve on that board. In 1881 she was conspicuous in forming the Charity Organization Soc. of New York, and till her death was a member of its council and chairman of the committee on district work, which has direct charge of work among the poor. Her publications comprise numerous reports and special pamphlets, and *Public Relief and Private Charity* (New York 1884), and *Industrial Arbitration and Conciliation* (1893).

LOWELL, Maria White: American poet: b. Watertown, Mass., 1821, July 8; d. Cambridge, Mass., 1853, Oct. 27. She was the wife of James Russell Lowell. The best known of her poems are *The Alpine Shepherd* and *The Morning Glory*, which appeared in the collection printed privately at Cambridge in 1855. The death of Mrs. Lowell, occurring the same night that a child was born to Mr. Longfellow, called forth the latter's poem beginning:

> Two angels, one of life and one of death,
> Passed o'er our village as the morning broke.

LOWELL, Percival, A.B., LL.D.: American astronomer: b. Boston 1855, Mar. 13. He was graduated from Harvard in 1876, for several years resided in Japan, and in 1883 was made secretary and councillor to the special commission to the United States from Korea, the first embassy sent from that country to any western power. In 1894 he established at Flagstaff, Ariz., the Lowell Observatory, which in 1896 was for a time removed to Mexico City. He was elected a member of the Royal Asiatic Society of Great Britain and Ireland, and a fellow of the American Academy of Arts and Sciences. He

lectured before the Lowell Institute in 1893-94 and 1894-95, contributed various articles to the publications of learned societies, and wrote *Chosön: The Land of the Morning Calm* (1885); *The Soul of the Far East* (1886); *Noto: An Unexplored Corner of Japan* (1891); *Occult Japan, or the Way of the Gods* (1894); *Mars* (1895); *Annals of the Lowell Observatory* (Vol. I., 1898; Vol. II., 1900; Vol. III., 1905); *The Solar System* (1903); *Mars and Its Canals* (1906); etc.

LOWELL, Robert Traill Spence, d.d.: American Episcopal clergyman; b. Boston, 1816, Oct. 8; d. Schenectady, N. Y., 1891, Sep. 12. He was a son of Charles Lowell (q.v.) and a brother of James Russell Lowell (q.v.). He was graduated from Harvard in 1833, for a time studied medicine in the Harvard Medical School, and later was in mercantile life at Boston. In 1839 he began the study of theology; went to Hamilton, Bermuda; was there ordained deacon in 1842 and priest in 1843; and became inspector of schools for the colony and domestic chaplain to the bishop. In 1843-7 he was rector at Bay Roberts, Newfoundland, and during the famine of 1846 in that district rendered valuable service as chairman of the relief committee. Having returned to the United States in 1847, he was active in mission work among the poorer classes at Newark, N. J.; was rector of Christ Church, Duanesburg, N. Y., in 1859-69, head-master of St. Mark's school (Southboro, Mass.) in 1869-73, and professor of Latin language and literature in Union College in 1873-9. He published *The New Priest in Conception Bay* (1858; revised in 1889), in which Bay Roberts appears as 'Peterport'; *Fresh Hearts That Failed Three Thousand Years Ago and other Poems* (1860); *Anthony Brode* (1874); *Burgoyne's March* (1877), written for the Saratoga County celebration at Bemis Heights; and *A Story or Two from an Old Dutch Town* (1878).

LOWENTHAL, *lō'vėn-tâl*, Isidor: Christian missionary: 1827-1864, Apr. 24; b. Posen, Prussian Poland; of Jewish parentage. He early acquired remarkable proficiency in Hebrew and philology, became a mercantile clerk, and 1846 fled to the United States through fear of imprisonment for having published a liberal poem. While seeking a living as a street-peddler in New York, he attracted the attention of the Rev. S. M. Gayley, of Wilmington, Del., through whose efforts he was appointed teacher of French and German in Lafayette College. He also entered the senior class as a student, and was graduated 1848. Subsequently he was appointed teacher of languages in the Mount Holly (N. J.) Collegiate School. In 1851 he was converted to Christianity, 1852 entered Princeton Theol. Seminary, 1855 was appointed tutor in the College of New Jersey, and 1856 entered the service of the Presb. Board of Foreign Mis-

sions as missionary to the Afghans in India. He soon learned the Persian, Cashmiri, Hindostanee, Arabic, and Afghan languages; translated the New Test. into the latter; and was completing an Afghan dictionary when his greatly useful career was cut short by an accidental death at Peshwur.

LO'WENTHAL, JOHN JACOB: 1810, July—1876, July 20; b. Buda-Pesth, Hungary: chess expert. He became widely known as a chess player 1841, came to the United States 1849, went to London to engage in a chess tournament 1851, and resided there till his death. For several years he was chess editor of a number of daily and weekly newspapers, edited the *Chess-Players' Magazine* 1865-67, and *Transactions of the British Chess Association* 1867-69, and held the offices of secretary of the St. George and president of the St. James chess clubs.

LOWER, v. *lō'ėr* [from LOW 1, which see]: to bring low; to cause to descend; to let down; to bring down; to lessen; to humble or degrade; to enfeeble; to sink. LOW'ERING, imp.: ADJ. depressing; enfeebling; degrading: N. the act of bringing down or lessening. LOWERED, pp. *lō'ėrd.*

LOWER, or LOUR, v. *lowr* [Dut. *loeren,* to frown, to cast a cunning or wistful look: Low Ger. *luren,* to look displeased: Ger. *lauern,* to spy]: to begin to be overcast with clouds; to appear dark, gloomy, or threatening—applied to the weather, or to the countenance; to look sour or grim; to look sullen or angry. LOWER'ING, imp.: ADJ. appearing dark or threatening; gloomy. LOWERED, pp. *lowrd.* LOWER'INGLY, ad. *-lĭ.* LOWERY, a. *lowr'ĭ,* cloudy; gloomy.

LOWERMOST, a. *lō'ėr-mōst* [*lower,* and *most*]: superl. deg. of *low;* another form of *lowest:* see LOW 1.

LOWLANDS, n. plu. *lō'lăndz* [*low* 1, and *land*]: the flat or level districts of a hilly or mountainous country, as distinguished from the *highlands.* LOW'LAND, a. pertaining to the level districts. LOW'LANDER, n. *-ėr,* an inhabitant of the low or level districts—a term used in Scotland.

LOWNDES, *lowndz,* RAWLINS: 1722-1800, Aug. 24; b. British W. Indies: statesman. He removed with his parents to Charleston, S. C., when a child, was educated for the law, became a crown judge 1766, and was active in the early movements for colonial independence. In 1775 he was elected a member of the council of safety, 1776 was member of the committee that drafted a constitution for the province, 1777 was a member of the legislative council, and 1778 became president of the province. He was captured by the British at the fall of Charleston. After the war he was a member of the South Carolina legislature, and conspicuous for opposition to the federal constitution and advocacy of the African slave trade.

LOWTH, *lowth*, ROBERT, D.D.: English prelate: 1710, Nov. 27—1787, Nov. 3; son of the Rev. William Lowth, rector of Buriton, Hampshire. He was educated at Winchester School, whence he passed to New College, Oxford, 1730; took his degree M.A. 1737, and was appointed prof. of poetry 1741. In 1750 he became archdeacon of Winchester, and 1753 rector of East Woodhay, Hampshire. In the same year, he published in Latin his excellent *Lectures on Hebrew Poetry* (*De Sacra Poesi Hebræorum Prælectiones Academicæ*). It was greatly admired in England, and on the continent, where Michaelis republished it with notes and emendations incorporated in a 2d ed. by Lowth himself (new ed., Rosenmüller, Leip. 1815). In 1754, Lowth received from Oxford Univ. the degree D.D., became Prebendary of Durham and Rector of Sedgefield 1755, a fellow of the Royal Societies of London and Göttingen 1765, Bishop of St. Davids 1766, of Oxford a few months later, of London 1777. Besides his lectures, his two principal works are *Life of William of Wykeham* (1758) and *Isaiah, a New Translation, with a Preliminary Dissertation, and Notes, Critical, Philological, and Explanatory* (1778; German ed., by Koppe, Gött. 1779; third ed. in English 1842); a work rather elegant and ornate as a version, but of great value as correcting the numerous blunders of the 'Authorized Version,' and exhibiting how thoroughly literary and artistic is that section of Hebrew poetry which we call prophecy.

LOXA-BARK, n. *lŏks'a-bârk* [from a town of Ecuador, from the vicinity of which the finest cinchona-bark is said to be exported]: one of the three varieties of pale cinchona-bark. Loxa-bark is derived exclusively from *Cinchona condaminea*, or from it and *C. scrobiculata*. The former tree is cultivated in India at high elevations in the Nilgiri Hills, in Ceylon, and in Sikkim.

LOXOCLASE, n. *lŏks'ō-klāz* [Gr. *loxos*, oblique; *klasis*, cleavage]: a variety of orthoclase, containing a large proportion of soda.

LOXODON, n. *lŏks'ō-dŏn* [Gr. *loxos*, oblique; *odous* or *odonta*, a tooth]: one of the sub-genera (genera, according to some writers) into which the elephants are divided; the present African elephant is the type.

LOXODROMIC, a. *lŏks'ō-drŏm'ĭk* [Gr. *loxos*, oblique; *dromos*, a course]: pertaining to oblique sailing by the rhumb-line. LOXODROMIC CURVE or LINE, a curve of double curvature on the surface of a sphere or spheroid, which cuts all meridians at the same angle. The course of a ship sailing in an oblique direction always to one point of the compass, is a loxodromic line, in nautical phrase a *rhumb-line*. These lines appear as straight lines on *Mercator's Projection* (see MAP). A ship sailing obliquely to the direction of the N. pole (say, two points off) would wind round it in infinite circuits, always ap-

proaching nearer, but never reaching it. In this property, as well as in others, the loxodromic line is analogous to the common logarithmic spiral. LOX'ODROM'ICS, n. plu. *-iks*, the art of oblique sailing by the rhumb-line.

LOXOMMA, n. *lŏks-ŏm'mă* [Gr. *loxos*, oblique; *omma*, the eye]: in *geol.*, a genus of labyrinthodont reptiles.

LOXONEMA, n. *lŏks'ō-nē'mă* [Gr. *loxos*, oblique; *nema*, a thread]: a fossil genus of pyramidal-shaped shells—so named in allusion to the thread-like striæ which mark the surface of many species.

LOYAL, a. *loy'al* [F. *loyal*, loyal: It. *leale*—from L. *legālis*, conformable to law, legal—from *lex*, F. *loi*, law]: in *former times*, conformable to the laws of honor; faithful to a prince or superior; true; devoted. LOY'ALLY, ad. *-lĭ*. LOYALTY, n. *loy'al-tĭ*, fidelity to a prince or sovereign; the devotion of a wife to her husband; fidelity to a cause or to one's word. LOY'ALIST, n. *-ĭst*, a person who adheres to his sovereign, particularly in times of civil commotion.

LOY'ALISTS, or TORIES: in American history were those persons who remained loyal to Great Britain during the revolutionary war. They represented all classes, a majority of them, however, being office holders and members of learned professions. Others were adventurers who adhered to England with the hope of gain or official preferment. At the close of the revolution the royalists were estimated at 1,000,000 or a third of the entire population of the colonies. The whigs took vigorous action against the loyalists, banished many of them under penalty of death and confiscated the estates of others. Between 40,000 and 50,000 loyalists are said to have fled to Canada prior to 1786. Consult: Ryerson, *Loyalists of America, 1620-1816* (1880); Van Tyne, *The Loyalists in the American Revolution* (1902).

LOY'AL LE'GION (OF THE UNITED STATES), MILITARY ORDER OF THE: instituted Philadelphia, 1865, Apr. 15. The membership consists of companions of three classes: 1. Those who served as commissioned officers of the army or navy, regular or volunteer, in the war against secession, and who were distinguished for gallantry and meritorious service on the field of battle: 2. The eldest sons of such officers who have attained the age of majority: 3. Civilians who during the rebellion distinguished themselves by acts of fealty or loyalty. Companions of the third class are restricted in number to three per cent. of the entire number of first class companions. The perpetuation of the Loyal Legion depends on its feature of heredity of eligibility to membership—the eldest son of a companion of the first class being eligible to the second class, when of age, and to the first class on the death of the person from whom he inherits his eligibility. The badge of the order is a star with blue and gold rays pendant from a ribbon of

red, white, and blue. There is no insurance feature, and there are no parades. Nearly all the companions of the Loyal Legion are also comrades of the Grand Army of the Republic. The membership is over 10,500, divided among 20 commanderies, each representing a state and one commandery representing the District of Columbia. The commandery-in-chief is located at Philadelphia, where it meets every two years; a congress of the order meets every four years. Among commanders-in-chief have been Gen. Winfield S. Hancock, Lieut.-Gen. Philip H. Sheridan, and Gen. Rutherford B. Hayes. The objects of the Loyal Legion are to cherish the memories of the war for the unity of the republic, to advance the interests of the soldiers and sailors of the United States, and to extend all possible relief to their widows and children, to foster military and naval science, and to enforce unqualified allegiance to the national government, and to maintain the national honor, union, and independence.

LOY'ALTY ISLANDS: coral group in the s. Pacific, about 60 m. e. of New Caledonia. The largest is Lifu, about 50 m. long, 25 m. broad. The elevation is nowhere more than 250 ft. above sea-level. The soil is thin on a rocky basis, but some cotton and cocoa-nut oil are exported. There are missionaries of the London Missionary Society (Congl.), also Rom. Cath. missionaries. The French claim the islands as a dependency of New Caledonia. Pop.—classed as Melanesian—about 20,000.

LOYOLA, *loy-ō'la,* IGNATIUS DE (INIGO LOPEZ DE RECALDE), SAINT: founder of the order of Jesuits: 1491-1556, July 31; b. at his ancestral castle of Loyola, near Azpeitia, province of Guipuzcoa, Spain; youngest son of Bertram de Loyola and Marina Salez de Baldi. After the scant training of that age in letters, he was received as page in the court of Ferdinand; but the restraint and inactivity of court-life were distasteful to his enthusiastic mind, and under the auspices of his relative, Don Antonio Manriquez, Duke of Najura, he embraced the profession of arms. His career as a soldier displayed both the excellency and the irregularities of his ardent temperament, thrown undirected among the duties and temptations of a military life. Of his bravery and chivalrous spirit, many remarkable instances are recorded, one of which was the turning point of his career. In the defense of Pampeluna, he was severely wounded in both legs, one being fractured by a cannon-ball, and the other injured by a splinter, and having been taken prisoner by the French, was by them conveyed to his paternal castle of Loyola, where he lay in long and painful confinement. After a very painful and nearly fatal operation, he recovered; and with his returning strength resumed his habitual levity; for, to remove a deformity from the first setting of his wounded limb, he consented to having it re-broken and re-set. After this operation,

LOYOLA.

his convalescence was even more slow; and the stock of romances by which he was wont to relieve the tedium of confinement, having been exhausted, he was thrown on the only other available reading, the *Lives of the Saints*. The result, in so ardent a temperament, was a spiritual enthusiasm equally intense in degree with that by which he had been drawn to feats of chivalry. The spiritual glories of St. Francis or St. Dominic now took, in his aspirations, the place of the knights of mediæval romance. With souls like his there is no middle course: he threw himself, with all the fire of his temperament, upon the new aspirations which these thoughts engendered. Renouncing the pursuit of arms, and all other worldly plans, he resolved to prepare himself for his new course by a pilgrimage to Jerusalem. For immediate preparation, he retired in the garb of a beggar to the celebrated monastery of Montserrat, where, on the vigil of the Feast of the Annunciation, 1522, he hung up his arms, as a votive offering significative of his renunciation of the works of the flesh, an an emblem of his entire devotion to the spiritual warfare. From Montserrat he set out bare-footed on his pilgrimage, the first stage of which was a voluntary engagement to serve the poor and sick in the hospital of the neighboring town of Manresa. There his zeal and devotion attracted such notice that he withdrew to a solitary cavern in the vicinity, where he pursued alone his course of self-prescribed austerity, until he was carried back exhausted to the hospital in which he had served. To this physical exhaustion succeeded mental depression, almost despair, from which he arose with spiritual powers renewed by the struggle. From Manresa he went by Barcelona to Rome, whence, after receiving the papal benediction from Adrian VI., he proceeded on foot, as a mendicant, to Venice, and there embarked for Cyprus and the Holy Land. He would gladly have remained at Jerusalem, and devoted himself to the propagation of the gospel among the infidels; but not being encouraged in this by the local authorities, he returned to Venice and Barcelona 1524. Taught by his first failure, he resolved to prepare himself by study for the work of religious teaching, and was not ashamed to return, at the age of 33, to the study of the rudiments of grammar. He followed these elementary studies by a further course, first at the new Univ. of Alcaca, afterward at Salamanca, in both of which places he incurred the censure of the authorities by some unauthorized attempts at religious teaching in public; and eventually he was induced to go to Paris for the completion of the studies thus repeatedly interrupted. Here he persistently struggled on without resources other than the charity of the faithful; and here, again, he returned to humble elementary studies. While thus engaged he formed among his companions the pious fraternity which resulted in that great organization which

has exercised such influence on the religious, moral, and social condition of the modern world. From the close of his residence in Paris, Loyola's history is the history of his order. (See JESUITS.) From the date of his election as the first general of his society, he resided in Rome. To him are due in the general spirit, and in many of the details, all its rules and constitutions; from him originated several works of general charity and benevolence, germs of great institutions still maintained in Rome; but the great source of his influence on the spiritual interests of the world is his well-known *Exercitia Spiritualia* (system of rules of penance and mortification). He died at Rome, worn out by long-continued austerities. His name was admitted to the preliminary step of beatification, 1609, and he was solemnly canonized as a saint by Gregory XV., 1623, his festival (duplex) is on July 31. His life has been written in almost every European language. The biographies of Ribadaneira, of Maffei, of Bartoli, and Bounours are well known and popular among Rom. Catholics.

LOYSON, *lwâ-zôn*, CHARLES (known by his monastic name, PÈRE HYACINTHE): French ecclesiastic: b. Orléans 1827, Mar. 10. He studied in the College of Pau and the ecclesiastical college of Saint Sulpice, was ordained priest in 1850, taught philosophy at the seminary of Avignon and theology at that of Nantes, entered the Carmelite order, and became renowned as a preacher at Lyon, Bordeaux, Nantes, and Paris. But his unorthodox utterances soon drew the censure of ecclesiastical authority, and his superiors prohibited him from preaching. He then left the Order, and, refusing to remain silent, he was excommunicated. In 1869 he visited the United States, where he was heartily welcomed. He protested against the dogma of papal infallibility, attended the Old Catholic congress in Munich, and to some extant fraternized with Protestants, but he repeatedly declared that he had no intention of leaving the Catholic Church. In 1873 he became pastor of an Old Catholic church at Geneva, and thus the founder of the Christian Catholic Church of Switzerland. In 1878 he opened in Paris an independent church, the Eglise Gallicane. Among his writings are: *Le Dimanche et les Classes laborieuses; L'Eglise catholique en Suisse; La Réforme catholique,* and other works.

LOZENGE, n. *lŏz'ĕnj* [OF. *lozange,* and *lozenge,* a square cake of preserved herbs, a quarry of glass: Sp. *losa,* a slate, a flag-stone; *losar,* to pave: Lang. *laouza,* a slate: F. *losange,* a lozenge]: figure with four equal sides having two acute and two obtuse angles, commonly called a diamond; a rhomb; common sweetmeat in the shape of a small round (formerly diamond-shaped) or oval cake (see LOZENGES). In *heraldry,* diamond-shaped shield on which the arms of spinsters and widows

are borne; a charge usually enumerated among the subordinaries, in the shape of a rhombus placed with the acute angles at top and bottom; the horizontal diameter must be at least equal to the sides, otherwise, it is not a lozenge, but a Fusil. LOZENGED, a. *lŏz'ĕnjd*, or LOZENGE-SHAPED, a. made in the shape of a lozenge. LOZENGY, a. *lŏz'ĕn-jĭ*, in *heraldry*, divided into lozenge-shaped compartments of alternate tinctures.

LOZENGES, *lŏz'ĕnj-ĕz:* forms of administering remedies intended to act on the pharynx and the laryngeal opening; e.g., in relaxed or inflamed states of the tonsils and uvula, in chronic coughs, etc. Lozenges should be composed of several demulcent substances, such as farinaceous matter, sugar, gum, and isinglass, since such a mixture retards as long as possible their solution. The chief difference between lozenges and *drops*, is, that in drops the sugar has been rendered fluid by heat.

LOZÈRE, *lō-zār':* department in s. France, named from Mt. Lozère, one of the summits of the Cevennes. It was formed from the province of Languedoc, and comprises the arrondissements of Mende, Florac, and Marvejols; 1,990 sq.m. The department is mountainous, the central mass of the Cevennes, here called the Margeride mountains, occupying the e. and s.e. portions. In the mountains, the climate is severe and variable, and little grain is produced; but the slopes on the s. side of the Cevennes, toward the valley of the Rhone, are clothed with the mulberry, the olive, and the vine. Wolves abound in the forests, which are extensive. Cattle, sheep, and mules are reared. The mines yield iron, antimony, lead, copper, silver, and some gold. Cap., Mende.—Pop. of dept. (1901) 128,866.

LOZIER, *lō'zhēr*, CLEMENCE SOPHIA (HARNED): American physician: b. Plainfield, N. J., 1812, Dec. 11; d. New York 1888, Apr. 26. In 1829 she was married to A. W. Lozier; in 1849 began the study of medicine, and in 1853 was graduated from the Syracuse Medical College. She entered practice in New York, and there had great success as a surgeon. The New York medical college and hospital for women was founded largely through her efforts, and for many years she was a professor in that institution and dean of its faculty. She was also for four years president of the National Woman Suffrage Society. She was a prominent woman suffragist and active in reform and philanthropic movements.

LUALABA, *lô-â-lâ'bâ:* a head stream of the Kongo river, Central Africa, which rises near Kabinda on the southern boundary of the Kongo Free State, receives several affluents such as the Lufira and Lubudi, passes through a hilly, forest and lake region, and after a course of about 650 m., the last 250 of which are navigable, unites with the Luapula (q.v.) at Ankoro to form the Kongo.

LUAPULA, *lô-â-pô'lâ:* a river in Central Africa, the chief of the two principal head-streams of the Kongo. It rises as the Chambezi s. of Lake Tanganyika, near Fwamba on the Stevenson Road, flows s.w. through Lake Bangweolo, whence it issues as the Luapula, flows northward through Lake Moero, then northwestward until it unites at Ankoro with the Lualaba (q.v.) to form the Kongo.

LUBANG, *lô-băng':* the largest and only inhabited island of the group of the same name lying at the western entrance of the Verde Passage, Philippines, between Luzon and Mindoro, s.w. of Manila. The island of Lubang is 17 m. in length from n.w. to s.e.; area, 51 sq.m.; area of group 76 sq.m. The interior of the island is mostly mountainous, but the coasts are low. The chief town is Lubang on the n. coast, which has considerable native trade; the only port safe for all vessels at all seasons of the year is Tilig, on the n.e. coast. Civil government was established in these islands in 1901, and in June 1902 they were detached from the province of Cavite and annexed to the province of Marindique. Pop. 3,000.

LUBAO, *lô-bä'ô:* a pueblo of the province of Pampangas, Luzon, Philippines, situated on the northwestern channel of Pampanga delta, 5 m. s. of Bacolor. It is the trade centre of an agricultural region. Pop. 21,200.

LUBBER, n. *lŭb'bėr* [Dut. *loboor*, a pig or dog with hanging ears, a raw silly youth: Icel. *lubbaz*, to loiter about; Gael. *leobhar*, clumsy: W. *llabi*, a stripling, a long lubber]: a heavy clumsy fellow; a name given in contempt by sailors to those unacquainted with the duties of a seaman. LUB'BERLY, a. *-lĭ*, tall and clumsy; lazy: AD. awkwardly; clumsily. LUBBER'S-HOLE, a hole in the futtock-plates at the junction of the upper and lower masts through which a landsman would go in preference to the futtock-shrouds. LUBBER'S-POINT, the mark on the inside of the compass-case indicating the direction of the ship's head—so called as a *land-lubber* only would depend upon it in steering.

LUBBOCK, *lŭb'ŏk*, FRANCIS RICHARD: American politician: b. Beaufort, S. C., 1815, Oct. 16; d. 1905, June 22. He went to Texas in 1836, held the office of comptroller under the republic of Texas, in 1856 became lieutenant-governor of Texas, and was its governor in 1861-3, whence he was known as the 'war governor.' Subsequently he entered the Confederate service, became colonel of cavalry, was aide-de-camp to President Jefferson Davis and was captured with Davis and imprisoned for eight months in Fort Delaware. He wrote *Six Decades in Texas* (1900).

LUBBOCK, JOHN, D.C.L., LL.D., F.R.S., D.L., BARON AVEBURY: British archæologist and man of science: b. London 1834, Apr. 30. He was educated at Eton and

joined the banking business of his father, Sir John William Lubbock (q.v.) in 1848, becoming a partner in 1856. He rose to great eminence in his profession, and was appointed to various honorable and responsible posts in connection with it. He entered parliament in 1870 for Maidstone in the Liberal interest, and from 1880 till 1900 sat for London University, from 1886 as a Liberal-Unionist. In 1900 he was raised to the peerage as Baron Avebury. He is a recognized authority on financial and educational questions, and his name is associated with several important public measures, such as the bank holidays, ancient monuments, shop hours, and public libraries acts. He is still more distinguished as a man of science. His studies have been chiefly directed toward the ancient remains and history of mankind; and the habits of insects, particularly of wasps, ants, and bees. Among his volumes are: *Prehistoric Times* (1865); *Origin of Civilization* (1870); *Origin and Metamorphoses of Insects* (1874); *British Wild Flowers in their Relation to Insects* (1875); *Addresses: Political and Educational* (1879); *Ants, Bees, and Wasps* (1882); *Representation* (1885); *Flowers, Fruits, and Leaves* (1886); *The Pleasures of Life* (1887); *The Senses, Instincts, and Intelligence of Animals* (1889); *The Beauties of Nature* (1892); *The Use of Life* (1894); *The Scenery of Switzerland* (1896); *Buds and Stipules* (1898); *On Seedlings* (2 vols.); *La Viedes Plantes; Chapters in Popular Natural History; Collembola and Thysanura; The Scenery of England* (4th ed. 1902); *Coins and Currency* (1902); *Essays and Addresses* (1903); *Free Trade* (2d ed. 1904); etc., besides a large number of papers in the transactions of learned societies. He has done much to promote a popular interest in matters of science, not only by making more accessible the work of others, but by extensive personal investigation. He presided over the York meeting of the British Association in its jubilee year (1881), and the address he delivered on that occasion was published separately under the title *Fifty Years of Science.* He is connected with a large number of scientific bodies both in the United Kingdom and on the Continent.

LUBBOCK, Sir John William: English astronomer and mathematician: b. Westminster, London, 1803, Mar. 26; d. 1865, June 20. He was graduated from Trinity College, Cambridge, in 1825; became a banker; found an avocation in scientific studies; made particular investigations in physical astronomy and Laplace's theory of probability; was treasurer and vice-president of the Royal Society in 1830-5 and 1838-47; and was the first vice-chancellor of London University (1837-42). Among his writings are: *An Elementary Treatise on the Computation of Eclipses and Occultations* (1835); *An Elementary Treatise on the Tides* (1839); and *On the Gnomonic Projection of the Sphere* (1851).

LÜBECK, *lü'bĕk:* city, formerly one of the four free cities of Germany; on the river Trave, about 40 m. n.e. of Hamburg, 14 m. from the Baltic. It is on rising ground, and its appearance with its walls and ramparts still partly standing, its great gates, its proud towers, its Gothic churches, and its antique gabled houses is still almost mediæval. Its principal buildings are St. Mary's Church (*Die Marienkirche*), one of the most beautiful specimens of Gothic architecture in n. Europe, finished 1304, with three naves, the central one 119 ft. in length, and two towers, 382 ft. high; St. Giles' Church and St. Peter's Church; the town-house, containing the Hanseatic archives and a public library (100,000 vols.) built of red and black glazed tiles; the cathedral, built 1170-1341; the monastery church, also a masterpiece of Gothic; the exchange, and the banks. Lübeck is rich in educational establishments of all kinds, religious and secular—the number within the city amounting to 54, while in the suburbs there are no less than 37, in all 91. The provision for the poor is excellent, from large bequests of citizens at different periods, the largest benevolent institution being the Hospital of the Holy Ghost. The industrial activity is considerable. Ship-building and engineering are carried on; there are many breweries and important cigar manufactories; but in the old days when the Hanseatic League (q.v.) was flourishing, the Merchant Company or College could reckon 5,000 members. The fisheries are important and prosperous. Chief imports are wine, silks, cottons, earthenware, pigments, colonial products, and timber from Sweden and Finland; chief exports, grain, cattle, iron, and wool. The harbor is 16 or 17 m. down the river, at Travemünde, a bathing-place, though the river has of late years been so much deepened that the largest ships can come up to Lübeck. Pop. of town and suburbs (1900) 82,098.

Lübeck has existed since the 11th century, and received important privileges from the German emperors in the 12th century, which were confirmed by the Danes, into whose power it fell 1201. It was declared a free city of the empire 1226, and thereafter maintained its independence against the Danes, and joined the other commercial towns in the great Hanseatic League (q.v.). With the decline of that League, Lübeck lost its historic importance, but continued a flourishing and independent commercial city, till it was taken and plundered by the French, 1806, Nov. 6. Its trade suffered also grievously from the French Continental System. In 1810 it was incorporated with the French empire. It recovered its independence 1813, and is now included in the German empire. Its trade has revived; and the railway connection with Hamburg, and lines of steamers to ports of the Baltic, have contributed much to its prosperity.

Constitution.—The constitution, anciently aristocratic, has been democratic since 1669. The government is in-

trusted to a senate of 14 members who, in legislative and in certain administrative functions, need the concurrence of the municipality or council of citizens, a body of 120 members. The supreme court of appeal for the free cities was in Lübeck till 1879, when the imperial courts became supreme, Lübeck Law (*Lübisches Recht*) remains of acknowledged authority in many questions.

LÜBKE, *lüp'kĕh*, WILHELM: art historian: b. Dortmund, Germany, 1826, Jan. 17; d. 1893, Apr. 5. He studied in Bonn and Berlin; became professor of the history of architecture in the Berlin School of Architecture 1857; 1858-60 travelled in Italy, France, and Belgium; and was professor of archæology and the history of art in the Polytechnic School at Zurich 1861-6; in that at Stuttgart 1866-85, and at the Karlsruhe high school 1885-93. He wrote the text of the illustrated Madonna, Titian, Paul Veronese, and Michael Angelo *Albums.* Chief among his works are: *Mediæval Art in Westphalia* (1853), which at once gave him a high place among art-critics; the *History of Architecture* (*Geschichte der Architektur,* 1855), the first popular manual of the subject, and a great success; *Outlines of the History of Art* (1860, 11th ed. 1891), translated into English by Clarence Cook, 1880; *History of the Renaissance in France* (1868); *History of the Renaissance in Germany* (1873); *History of German Art* (1888); *Recollections* (1891). He was extremely versatile, and previous to his work in art, gave instruction in vocal and pianoforte music.

LUBLIN, *lô'blĭn:* government of Russian Poland; bounded n. by the government of Siedlce, e. by Volhynia, s. by Galicia, w. by Radom; traversed by the Wieprz, Bug, and Vistula rivers; 6,501 sq.m.; cap. Lublin. It has a level surface and fertile soil, and contains important woolen and linen manufactories. The capital is the handsomest and most important town in Poland after Warsaw, contains the church of St. Nicholas (founded 986), and holds three annual fairs.—Pop. 1,200,000.

LUBLIN, *lô'blĭn:* city in Russia, capital of the Polish government of Lublin, on the left bank of the Bistritz, a feeder of the Wieprz, a branch of the Vistula; 96 m. s.e. of Warsaw. Lublin dates from the 10th century, and among the objects of interest which it presents to tourists, the church of St. Nicholas (founded 986) and the ruins of a royal castle are notable. It was formerly fortified. The chief buildings are the town-hall, the Sobieski palace, cathedral, Jews' synagogue, Piarist college, and several schools and hospitals. It has several manufactories of woolen and linen goods, in which, as well as in corn and Hungarian wine, it has extensive trade. Three large fairs, each lasting one month, are held here annually. Pop. 52,000.

LUBRICANTS, *lô'brĭ-kants:* substances, usually fluids,

put between solid surfaces in machinery, that are subject to friction, in order to lessen that friction, thus diminishing the wear and tear of the parts, and the waste of energy, of the machinery. Animal and vegetable oils and mineral oils, are the common lubricants, and they are sometimes united with such substances as graphite. Of animal oils the most suitable are sperm, lard, neatsfoot, tallow, and whale oil; of the vegetable, those most used are the oil of the olive, cotton seed, and rape seed, the last two generally in combination with other more expensive oils. The use of mineral oils for this purpose has increased very much, especially in combination with other oils, for two reasons: first, because of their greater cheapness; and second, because they contain fewer volatile constituents than the vegetable oils, and there is therefore less loss by evaporation. For machinery, however, where there is heavy pressure exerted between the sliding surfaces, mineral oils are too thin to be satisfactorily used, except in combination with other oils having more body. To prevent the waste of oil in lubricating machinery, various devices have been invented by which the oil can be used several times over. There are used either automatic arrangements by which the drippings are pumped up again upon the bearings; or pans are supplied in which the oil dripping from the bearings is caught up, and then is used again to refill the oil-cups. If used too often the oil becomes worn out by being filled with dust and with minute particles of metal worn off from the machinery. Even then it can be purified and again made available by being washed in a solution of sodium or potassium carbonate of soda, or potash, and calcium chloride in boiling water. Still there is always more or less loss from evaporation, and from certain chemical changes taking place in the oil on account of the heat generated by friction, which gradually render it unfit for lubricating purposes. There is an enormous amount of fraud in the manufacture and sale of lubricants, such as selling materials of little value at a high price or falsely representing the composition of the lubricant.

LUBRICATE, v. *lô'brĭ-kāt* [L. *lubrĭcātus*, rendered slippery; from *lubrĭcus*, slippery: It. *lubricare*]: to make smooth or slippery, as by oil, mucus, and the like, smeared over. LU'BRICATING, imp. LU'BRICATED, pp. LU'BRICATOR, n. *-tĕr*, one who or that which lubricates. LU'BRICA'TION, n. *-kā'shŭn*, also LU'BRIFICA'TION, n. *-fĭ-kā'shŭn*, the act or operation of making smooth and slippery, as machinery by oil. LUBRICITY, n. *lô-brĭs'ĭ-tĭ*, smoothness, slipperiness; aptness to glide over any part; the property of facilitating the motion of bodies in contact; instability; wantonness; lewdness.

LUBRICATOR: the valve in an engine through which oil or tallow is admitted to the cylinders for the pur-

pose of lubrication. These valves communicate with the cylinders either through the steam-chests or through a pipe leading from the cab. The lubricators placed in the cab are called sight-feed lubricators. In these lubricators, the weight of a column of water displaces the oil in the cup, causing it to flow upwards drop by drop, through water in glass tubes, to the pipes leading to the steam-chests. The flow of the oil is thus placed constantly in sight of the engineer, and enables him to know whether the lubrication is continuous and regular or otherwise.

LU'CA GIORDA'NO. See GIORDANO, LUCA.

LUCANIA, *lū-kā'nĭ-a:* old dist. of s. Italy, or Magna Grecia, inhabited originally by the Chones and Œnotrians; subjugated by Rome B.C. 272. The anc. Lucania is now chiefly the province of *Basilicata* (q.v.), and in small part, of Principato.

LUCANUS, *lū-kā'nŭs,* MARCUS ANNÆUS (or LUCAN): chief Roman poet of the Silver Age: 39, Nov. 3—65; b. Corduba (modern *Cordova*), in Spain. He was brought to Rome in infancy by his father, younger brother of the philosopher Seneca. He received an education of the best kind, was school-fellow of Persius, and friend of Emperor Nero, and entered on life with brilliant prospects. He became quæstor and augur, and declaimed and recited in public with high applause. But his prosperity and himself were equally short-lived. He lost the favor of Nero, who was jealous of his poetry and his fame. Under the sting of this annoyance, he joined the conspiracy against Nero's life in 65. It is painful to read in Gorges, that when arrested with others after the betrayal of the plot, he tried to save his life by accusing his mother of complicity. Tacitus adds that letters were forged in Lucanus' name implicating his father also. But the emperor did not grant him a reprieve; and he destroyed himself by having his veins opened, dying with a certain ambitious composure, at 27 years of age. Whatever the faults of Lucanus' character—and in the brief notices we have of him, both his vanity and levity are apparent—he holds a conspicuous place among the poets of Rome. The only work of his is the *Pharsalia,* an epic in 10 books, on the civil war between Cæsar and Pompey. As an epic, it is, as Niebuhr somewhat quaintly says, an 'unfortunate' performance, for it proceeds in the manner of annals, and lacks the comprehensiveness, unity, and learning of the greatest works of its class. Nor is its style, generally speaking, good, for it is often turgid and obscure, and marked with those defects of taste which belong to poems inspired by a rhetorical age and school of writing. But when every deduction has been made, the *Pharsalia* affords ample proof that Lucanus was a man of real and powerful genius. There is an eye for the

sublime, both in the moral and in the physical worlds, there is all the vigor of poetic oratory in its declamations; and there are felicities of epigram which have secured to many a line a fresh and constant life, as part of the familiar literature of the world. Lucanus was very popular in the middle ages; and in modern times, his poem has been a particular favorite among lovers of political freedom—especially among the former school of European classical republicans. There is a well-known English translation of Lucanus, by Rowe, which Dr. Johnson thought one of the best translations in the language.

LUCA'NUS—LUCAN'IDÆ. See STAG BEETLE.

LUCARIS, *lū-kā'rĭs,* CYRIL: theologian of the Greek Church: b. in the island of Candia 1572; d. some time after 1637, June. He studied first at Venice, afterward at Padua, and subsequently visited Germany, where he formed intimate relations with the Prot. doctors, and carried back into Greece their spirit and their dogmas. Ordained a priest, he rose, in the course of years, to the highest dignity in the Greek Church, being elected Patriarch of Constantinople 1621. He still cherished his Prot. opinions, and endeavored even to promulgate them in the church over which he ruled; but his course excited violent opposition among the clergy, and Lucaris was in consequence banished to Rhodes. Through the influence of the English ambassador he was soon reinstated in his office. Unluckily, a confession of faith that he had caused to be printed, quite heretical—i.e., Protestant—in its character, fell into the hands of his adversaries, and he was again involved in difficulties. In 1636, he was banished to the isle of Tenedos, and though recalled after a few months, in 1637, June, he was seized in Constantinople, hurried on board a vessel, and his fate was never ascertained. According to some, he was strangled in the ship which bore him off; according to others, he suffered this fate in a castle on the shores of the Black Sea. His Protentantism has been repeatedly condemned by Greek synods.

LUCARNE, *lū'kârn:* dormer window (see under DORMANT): the name is usually applied to the small dormers in church spires.

LU'CAS OF LEYDEN. See LEYDEN, LUCAS VAN.

LUCAS, *lū'kas,* DANIEL BEDLINGER, LL.D.: American lawyer and author: b. Charlestown, W. Va., 1836, Mar. 16. He was graduated from the University of Virginia (Charlottesville, Va.) in 1856; in law from Washington College (Lexington, Va., now Washington and Lee University) in 1858; in the civil war served in the Confederate army on the staff of Governor Wise of Virginia in the Kanawha valley, and from 1867 practiced law at Charlestown. In 1884-7 he was a member of the West Virginia legislature; in 1887-8 was a United States senator under appointment of the governor; and in 1888-93

was president of the supreme court of appeals of West Virginia. He was a presidential elector on the democratic ticket in 1872, 1876, 1884, and 1896. He obtained in the south a considerable reputation as a public speaker, and published a *Memoir of John Yates Bell* (1865); *Nicaragua and the Filibusters;* and, in verse, *The Wreath of Eglantine and other Poems* (1869); *The Maid of Northumberland: A Dramatic Poem* (1879); and *Ballads and Madrigals* (1884).

LUCAS, Edward Verrall: English author: b. 1868, June 12. He was connected with the London *Globe* 1893-1900 and with the *Academy* 1896-1901. He has published a popular *Book of Verses for Children* (1897), and *What Shall We Do Now?* (1900), as well as other works for young readers; *The Open Road* (1899); *Domesticities* (1900); *Wisdom While You Wait; England Day by Day* (1903), with C. L. Graves; *Highways and Byways in Sussex* (1904); etc.; and has edited the *Works and Letters of Charles and Mary Lamb,* and *The Life of Charles Lamb* (1905).

LUCAS, John Seymour: English artist: b. London 1849, Dec. 21. He studied with the woodcarver Gerard Robinson; and painting at the Royal Academy; first exhibited at the Academy in 1872; first made his mark by his *By Hook or Crook,* shown at Burlington House in 1875; and obtained recognition for the high technical excellence of his work. Among his later canvases are *Fleeced; For the King and the Cause; Intercepted Despatches; Charles Before Gloucester; After Culloden; The Call to Arms.*

LUCAY'OS. See Bahamas.

LUCCA, *lôk'kâ:* chief town of the Italian province of Lucca; in a fine plain, bounded by picturesque hills, and irrigated by the Serchio, 12 m. n.e. of Pisa. The commercial activity of its inhabitants obtained for it the name 'Lucca l'Industriosa.' Its great trade is in olive-oil and silk, and it was the first place in Italy where the production and manufacture of silk were successfully introduced. The town is surrounded by ramparts, which form a delightful promenade, and command a fine view of the whole valley of the Serchio; the streets are mostly narrow and crooked, but well paved; private dwellings are commodious, public edifices numerous and interesting. The principal edifices are the *Duomo,* or cathedral, with a magnificent façade, a Romanesque portico, and stained glass of the richest kind; the Church of San Michele, an ancient and imposing structure; the Church of San Frediano, founded in 686, furnishing an interesting specimen of early Christian architecture, and adorned with fine mosaics, frescoes, and paintings; the ducal palace; and the Palazzo Borghi, now converted into a poor-house. A splendid aqueduct, planned during the reign of Princess Elisa Bonaparte, and executed later, supplies the town

with water, and repays inspection. The environs abound in delightful villas. At several places in a charming valley, about 16 m. from the town, are the famous mineral baths of Lucca (Bagni di Lucca), temperature from 96° to 136° F. The waters are exported to all parts of Italy. —Pop. (1901) 74,971.

LUC'CA: formerly a small independent state, now a province of central Italy; bounded n. by Modena, e. and s. by Tuscany, w. by the Gulfs of Genoa and Massa; 512 sq.m. The surface is very diversified; the largest stream is the Serchio. Lucca is famed for extreme fertility, and for superior agriculture, which serves as model to the whole Italian peninsula. Principal products are grapes, olives, grain, mulberries, chestnuts, and vegetables. The marshy flats on the coast afford excellent pasture for cattle. Manufactures are silks, oil (esteemed the best in Italy), glass, paper, linens, cottons, etc.; the principal export is oil. The Lucchesi are a frugal, shrewd race; numbers leave home in search of employment, and they form a large proportion of the itinerant figure-venders, organ-grinders, and stucco-workers of Europe and America.

Lucca (anc. *Luca*) was made a Roman colony B.C. 177. It was erected into a duchy by the Lombards, and recovered its liberty 1055, when the chief town, Lucca (q.v.) became a free city. In 1327 it was a duchy, and was ruled by the celebrated Castruccio Castracani. In 1370 it became an independent republic, was erected into a principality 1805 by Napoleon, for his sister Elisa Bacciochi, and passed to Maria Louisa of Spain 1815. Her son, Duke Carlo Luigi, ceded it to Tuscany 1847, on obtaining possession of Parma and Piacenza; and 1860 it was annexed to Sardinia. It now forms one of the Tuscan provinces of Italy. Pop. (1901) 319,523.

LUCCA, *lôk'kâ*, PAULINA: opera singer: b. Vienna: 1842, Apr. 25; d. there 1908, Feb. 28. When 14 years old she entered the chorus of the Kärnther Thor Theatre and the choir of Karls Kirche, and when 17 made her first appearance on the stage in an important part at the Olmütz Theatre as Elvira in the opera of *Ernani*. The following year she sang in *Norma* and the *Huguenots* at Prague, and 1861-72 she was established in the Berlin Opera House, and also filled brief engagements in London, St. Petersburg, and other cities. In 1872, Sep., she made her first appearance in America at the New York Acad. of Music, and at once attained wide popularity. She was the favorite pupil of Meyerbeer, and created the part of the heroine in his opera *L'Africaine*. Her first husband was Baron von Rhaden, and second Baron Wallhofen, both resigning their commissions in the German army to marry her.

LUCE, n. *lôs* [L. *lucĭŭs*, a fish, supposed to be the pike]: a pike full grown. LUCES, n. plu. *lôs'ĕs*, in Shakespeare, probably means 'lice.'

LUCE, *lūs,* STEPHEN BLEECKER: naval officer: b. Albany, N. Y., 1827, Mar. 25. He entered the U. S. navy as midshipman 1847; became lieut. 1855, lieut.-commander 1862, commander 1866, capt. 1872, commodore 1881, and rear-admiral 1885; and was retired 1889, Mar. 25. During his naval career he was on sea service 33 years, shore or other duty 12, and unemployed 2. He was actively employed during the civil war along the Atlantic coast; commanded the *Juniata* of the European squadron 1869-70; founded the U. S. Naval War College, and was its president 1884-86; commanded the North Atlantic squadron 1886-88, and was active in establishing the U. S. naval training system. He published *Seamanship* (New York 1863-98-1905); *Naval Songs* (1883); and the *Patriotic and Naval Songster.*

LUCENA, *lū-sē'na,* Sp. *lô-thā'nâ:* town of Spain, province of Cordova, 40 m. s. of the city of Cordova; picturesquely situated between two hills. The neighboring territory is famous for its apricots and its breed of horses. Lucena is historically interesting, as the scene of the capture (1483, Apr. 21) of Boabdil, King of Granada. Pop. 21,294.

LUCENT, a. *lô'sĕnt* [L. *lucens* or *lucen'tem,* shining]: bright; shining; splendid.

LUCERN, or LUCERNE, n. *lô'sėrn* [F. *luzerne*—said to be connected with W. *llysiau,* plants, herbs: comp. *Lucerne,* in Switzerland], (*Medĭcāgo satīvă,* ord. *Legumĭnōsœ,* sub-ord. *Papĭlĭonācĕœ*): leguminous plant, with erect stem one to two ft. high, obovate-oblong and serrated leaves, long racemes, violet-purple flowers, and pods bearing many seeds. It is often called *alfalfa,* and the seed is widely sold under this name; known also as Spanish clover and California clover. It originated, probably, in Europe, and was extensively cultivated and highly valued by the Romans. In some S. American countries, to which it was doubtless brought by the Spaniards, it is still largely produced, and on some of the vast pampas it grows wild with great luxuriance. It was brought to this country about the beginning of the 19th century, but for a long time attracted little attention.

Where the climate and soil are favorable lucern is one of the most valuable of our forage plants. Sheep soon destroy it by close grazing, but it makes excellent pasturage for cows, is one of the best soiling crops, and yields a large quantity of palatable and nutritious hay. It thrives throughout the southern and southwestern states, and is grown to some extent in the northern states; but where the winters are severe it requires sheltered localities. Lucern does not thrive on heavy clays or on light lands underlaid by an impervious sub-soil. It withstands drought remarkably well. The roots often reach a depth of 15 ft., and, like other clovers, tend to enrich the soil.

LUCERNAL, a. *lū-sėr'nal* [L. *lucerna,* a lamp]: of or pertaining to a lamp or other artificial light; a microscope in which the object to be examined is illuminated by a lamp.

LUCERNE, *lô-sėrn':* canton in the centre of Switzerland, n.w. of the central mass of the Swiss Alps; about 577 sq.m. The soil is generally fruitful, and much grain and fruit are produced. In the more mountainous parts, the rearing of cattle is carried on to a greater extent than anywhere else in Switzerland. The highest elevation attained by the Alps in this canton is in Mt. Pilatus, steep jagged ridge of several peaks, the highest 7,290 ft. The principal stream is the Reuss, outlet of Lake Lucerne; principal lake, that of Lucerne. The inhabitants are mostly of German race and language, and all belong to the Rom. Cath. Church, except 5,000-6,000 Protestants, to whom the free exercise of their religion was accorded first 1828. The constitution of Lucerne is a representative democracy; 100 deputies form the Great Council, whose president bears title of *Schultheiss* (Judge). Pop. (1900) 146,159.

LUCERNE': city in Switzerland, cap. of the canton of Lucerne; on the Reuss, where it issues from the n.w. extremity of the Lake of Lucerne. The Reuss, which flows through the town, is crossed by five bridges, two of which are covered and ornamented with curious mediæval paintings, including a Danse Macabre. The town retains its feudal walls and watch-towers, and with the neighboring mountains, including the Pilatus and Rigi, is noted for its picturesque features and scenic beauties, making it a much-frequented tourist centre. Lucerne is well-built, has regular, clean streets, electrically lighted, and traversed by street railroads, a town-hall, with collections in art and antiquities; Jesuit college, now the government building; a 15th century parish church, with two slender towers; a Gothic Protestant church; Ursuline convent, with handsome church; a museum and cantonal library of 90,000 volumes; large town hospital, poorhouse, deanery, arsenal, a new International Museum of War and Peace, mint, casino, etc.; and besides the college or lyceum, several well-conducted educational establishments. An interesting monument is the *Lion of Lucerne,* designed by Thorwaldsen, in memory of the Swiss guards who fell in Paris in 1792 while defending the Tuileries, and hewn out of the solid rock. Lucerne has some transit trade, but the manufactures are unimportant; it depends chiefly on the important tourist traffic, accommodating annually over 100,000 visitors. Pop. (1900) 29,255.

LUCERNE', Chevalier Anne-César de la. See Luzerne, Chevalier.

LUCERNE', Lake of, or Lake of the Four Forest Cantons (Uri, Unterwalden, Schwyz, and Lucerne),

because its shores are formed by these: one of the most beautiful sheets of fresh-water in Switzerland, or Europe; length from Lucerne to Flüelen, about 25 m.; average breadth, about 3 miles. Its form is extremely irregular. The chief towns on its banks are Lucerne, Küssnacht, and Alpnach, at the n.w. and Flüelen, near its s.w. extremity. It is navigated by several steamboats.

LU'CIA, St.: one of the Windward Islands. See St. Lucia.

LUCIAN, *lū'shan:* Greek writer of 2d century after Christ. His chief contribution to literature was the development of the satiric dialogue, successfully combining the satire of Aristophanes with the dramatic dialogue of Plato. He also wrote numerous pieces satiric or critical —some cast in the form of letters, some introduced by a short dialogue but issuing in a continuous treatment of the superstitions or charlatanism of his age; others are short 'curtain-raisers' or epideictic speeches; also two short satiric dramas are attributed to him, as are 42 epigrams in the Greek anthology.

No other writer after the time of Alexander surpassed Lucian in his control of Greek prose. Although Syrian born, he not only mastered the Hellenistic or 'Common Greek,' used throughout the Roman Empire, but outdid the 'Atticists' of his day in the revival of an Attic diction deviating from Classic Attic in only a few particulars.

Life.—His life is mainly known from his own writings; born at Samosata on the Euphrates about 120 A.D. (possibly before 117 A.D.), first he was apprenticed as a statuary; then attended the famous rhetorical schools in Ionia; tried the career of a lawyer at Antioch; became a travelling rhetorician and lecturer, visiting Macedonia, Athens, Italy, and Transalpine Gaul; seems to have been an incumbent of one of the imperial professorships in Gaul; revisited Syria at the age of 40, when already famous for his epideictic speeches; settled at Athens and turned from rhetoric to write satiric dialogues. He was at the Olympic games at least four times. In his old age he again appears as a public 'show-lecturer,' and closed his career near the end of the century, apparently as a Roman official in Egypt.

Philosophy and Religion.—Lucian was no systematic philosopher. His frequent attacks upon the shortcomings, pretence and vices of contemporary representatives of the various schools, are largely external criticisms. He makes no real analysis of their doctrines. This is true even of his longest and most serious work, the *Hermotimus.* His chief ambition was the perfection of his Greek style as a vehicle for his fertile fancy. But he used this for a crusade upon shams of all kinds. His illustrations are like lantern slides on which pass before us the illiterate bibliophile; the credulous believer in ghosts,

demons, and faith-cures; the oracle-monger; the orthodox worshipper of the Olympic gods; the lying or incompetent historian; the greedy and lecherous philosopher; quack adherents of creeds old and new; the parasite, and the harlot. His philosophy was a negation. His religion was a denial of all superstition and dogma.

Christianity.—His thorough-going agnosticism allowed him to see nothing but a new delusion in Christianity, but his references to the Christians in the *Peregrinus* (the *Philopatris* is not by Lucian), though patronizing, are not unkindly, and actually confirm traditions handed down by the Christians themselves. The rage of the early church and the subsequent excision of the *Peregrinus* from many Lucian MSS. reflects merely the misplaced zeal of his critics. Some of the alleged reminiscences of the Scriptures, such as the parallels in the *Vera Historia* to the account of the New Jerusalem, or the casting out of the demon in the *Lie-Fancier,* might well have caused more uneasiness in the minds of zealous but ignorant critics.

Writings.—Of the 82 pieces ascribed to Lucian, at least 60 are probably genuine, although 34 have been called in question. A chronological classification is precarious, and a strict arrangement by subject-matter would be arbitrary. Among his short 'curtain-raisers' are: *The Suit of Sigma versus Tau* (in the court of the seven vowels)—a philological fantasy; *The Dream,* largely autobiographical; *Herodotus,* and *Zeuxis,* in which he airs his literary ambition or displays his genuine ability as an art-critic, which often reappears in his writings. Among those cast wholly in dialogue form, the best are: *Charon,* or the *Inspectors* of human life; *The Cock* (who is really Pythagoras and who teaches a shoemaker the lesson of contentment); *The Sale of Lives,* in which the philosophers are wittily caricatured; *The Fisher* (a sequel of the foregoing), stating Lucian's mission—exposing shams, and by turns serious and Aristophanic; *Timon,* the Misanthrope, to be read with Shakespeare's play; *The Twice-Accused,* the most important autobiographically and a humorous treatment of rhetoric, the orators and philosophy; *Zeus Cross-Examined, Zeus as Tragedian,* and *The Town-Meeting of the Gods,* all bitter satires on the orthodox polytheism; *The Cataplus,* or *The Ferry,* and the *Dialogues of the Dead* (repeatedly imitated from the time of Erasmus till the present), expanding the theme of the *Charon; The Dialogues of the Sea,* in which the satirist is almost wholly merged in the picturesque word-artist; *The Dialogues of the Courtesans* (compare MENANDER and HERODAS); *The Hermotimus,* Lucian's longest and most serious attack on the philosophers, notably the Stoics; *The Eunuch,* an unbridled attack on a certain candidate for a professional chair.

Four of his best pieces are cast in the frame-work of dialogue but pass into narrative form, the fore-runner

of the romantic novel; i.e. *The Icaromenippus* or the *Aëronaut,* containing some of Lucian's most brilliant narrative, his most caustic satire and, incidentally, a saunter through various schools of philosophy; *The Symposium,* an unrestrained attack upon the philosophers, vivid in narrative and full of side-lights on contemporary life; *The Lie-Fancier,* a series of admirable stories illustrating the credulity of an age possessed with demons, ghosts, magicians, and faith-cures—some of these reappear in Goethe, the *Ingoldsby Legends,* and in one of the St. Patrick legends.

The *Nigrinus,* introduced by a short letter, shows Lucian in his least skeptical philosophic attitude. The following are not cast in dialogue form at all.

The *Vera Historia* is the prototype for a goodly company of writers from Rabelais, Hans Sachs, Cervantes, Baron Munchausen, down to Jules Verne; *The Asinus* (its authorship is much disputed) also foreshadows the development of the romantic novel; *The Led-Philosophers* is an amusing but pathetic warning to the would-be family tutor; *The Life's-End of Peregrinus* is a bitter polemic against a Cynic philosopher who cremated himself at the close of the Olympic games in 169 (or 165) A.D. Incidentally it gives a vivid picture of ancient Olympia (for the allusions to the Christians, see above); *Alexander the False Prophet* is a companion polemic against a charlatan oracle-vender—both of these pieces are cast in the form of letters; *How to Write History* gives examples of the way *not* to write history; *The Illiterate Book-Collector* would serve as a satire on our own contemporaries; *The Complete Rhetorician* reflects an important phase of Lucian's life. For other works, compare Croiset's book (below).

Imitators.—Lucian's influence on European literature has been far-reaching. Among his debtors or open imitators are Erasmus, Sir Thomas More, Rabelais, Hans Sachs, Cervantes, Quevedo, Cyrano de Bergerac, Boileau, Fontenelle, Fénelon, Swift, Voltaire, Gil Blas, Baron Munchausen, Goethe, with many others.

Essays, etc.—The most complete book on Lucian is M. Croiset's *La Vie et les Œuvres de Lucien* (1882). The most illuminating essay is B. L. Gildersleeve's *Lucian* (in *Essays and Studies,* 1890).

Editions.—The most available annotated edition of his complete works is Hemsterhuis-Reitz (1743 and 1789), Greek and Latin, with bibliography to date. The best complete text is by Jacobitz (Teubner, 1897). J. Sommermrodt's Critical Edition (1886-1899) was left incomplete by the editor's death. *Lucian (Selected Writings),* by Allinson (1905), contains also a full introduction on Lucian's writings, imitators, and his Greek, and continues the bibliography from Reitz's edition to 1905.

Translations.—Latin: in the editions of Hemsterhuis-Reitz; Lehmann; and Dindorf (Didot). *French:* T. N.

Belin de Ballu (1789). *German:* Wieland (rather free paraphrasing) 1789; Pauly, 1832 (more literal but often useless). *English:* Francklin (1780); Tooke (quaint, interesting, and inaccurate); H. W. and F. G. Fowler (1905), boldly paraphrasing but often accurate and always interesting; Emily J. Smith (Mrs. Putnam) (1892). *Selections:* Racy.

LUCID, a. *lô'sĭd* [F. *lucide*—from L. *lucĭdus*, bright; clear: It. *lucido*]: clear; distinct; easily understood; not darkened or confused; applied to the intellect. LU'CIDLY, ad. *-lĭ.* LU'CIDNESS, n. *-nĕs*, or LUCIDITY, n. *lô-sĭd'ĭ-tĭ* [F. *lucidité*]: brightness; clearness.—SYN. of 'lucid': bright; shining; glittering; transparent; luminous; reasonable; sane; in *O.E.*, transparent; pellucid.

LU'CID INTERVAL: intermission in certain forms of mental disease. It may consist in the mere substitution of clearness and calmness for violence and confusion; in the occasional recognition of his actual condition and external relations by the lunatic; or in the re-establishment of intelligence and natural feeling so complete as to differ from sanity solely in the want of permanence. The duration is likewise sometimes so considerable and regular as to divide the mental and moral life of the individual into two nearly equal parts. It has been believed that even in such cases the interval is a part or link of the disease, and that there invariably exists an undercurrent of unsoundness. It is found to be extremely difficult to distinguish this state from real and trustworthy restoration to reason, except by reference to the test by duration. It has been observed that, immediately before death, the insane sometimes regain lucidity, and, after years of extravagance and absurdity, die in possession of comparative sense and serenity.

LUCIFER, n. *lô'sĭ-fer* [L. *lucĭfer*, light-bringing—from L. *lux*, or *lūcem*, light; *fero*, I bring]: the planet Venus when appearing as the morning star; a friction-match (see MATCHES).—The name occurs in the Bible only once, Is. xiv. 12, where it poetically designates the king of Babylon fallen from his height of pride. Tertullian and others, misunderstanding this passage as referring to the fall of Satan from heaven, gave occasion for the common misapplication of the name to the great spirit of evil.

LUCILIUS, *lū-sĭl'ĭ-ŭs*, GAIUS: Roman author: b. Suessa 180 B.C.; d. Naples 103 B.C. He was grand-uncle to Pompey the Great on the maternal side. He served his first campaign against Numantia under Scipio Africanus, with whom he was very intimate. He is considered the inventor of the Roman *satira*, because he first gave it the form under which this kind of poetry was carried to perfection by Horace, Juvenal, and Persius. His satires were superior, indeed, to the rude productions of Ennius and Pacuvius, but he in turn was surpassed by those who

followed him. Horace compares him to a river which carries along precious dust mixed with useless rubbish. Of thirty books of satires which he wrote, only 940 fragments have been preserved. In his lifetime these satires had an uncommon popularity. Consult the edition by Lachmann and Vahlen (1876); also Müller, *Leben und Werke des Gaius Lucilius* (1876).

LUCIMETER, n. *lô-sĭm'ĕ-tėr* [L. *lux, lucis,* light; Gr. *metron,* measure]: an instrument for measuring the intensity of light; a photometer.

LUCINA, *lū-sī'na* [from *lux,* light]: in *Rom. myth.,* a surname of Juno as goddess of light, especially as presiding over birth, or the bringing of offspring forth into the light.—Also the name of an Egyptian goddess.

LUCI'NA: genus of lamellibranchiate mollusks, allied to *Veneridæ* (see VENUS). *Lucinidæ* is the family. The shell is orbicular, or nearly so, and bears a very long impression of the anterior muscle. The animal has a long, generally cylindrical foot. The species are numerous, are found in almost all seas, and at all depths at which life is known to exist, burrowing in the sand or mud. There are also many fossil species in the more recent formations.

LUCIUS, *lū'shĭ-ŭs:* the name of three popes, as follows:

LUCIUS I.: d. 254, March. He succeeded Pope Cornelius on June 23 and by some authorities is said to have suffered martyrdom under Gallus, but this cannot be proved.

LUCIUS II. (GHERARDO CACCIANEMICI): d. 1145, Feb. 15. He was legate to Germany from Honorius II., supported Innocent II. against the antipope, Anacletus II., and became chancellor of the Holy See. In 1144 he succeeded Celestine II., but was unsuccessful in quelling revolts against the papal authority in Rome, and while heading his troops to suppress a disturbance, was killed by a paving stone thrown from the mob.

LUCIUS III. (UBALDO ALLUCINGOLI): d. Verona 1185, Nov. 25. He was the cardinal-bishop of Ostia and became pope 1181, Sep. 1. He was the first pope elected solely by the cardinals. The emperor Frederick Barbarossa having claimed the estates bequeathed to the papacy by Matilda of Tuscany, Lucius demanded their surrender. Frederick refused and the quarrel ended in the expulsion of Lucius from Rome. He died an exile in Verona.

LUCK, n. *lŭk* [Ger. *glück;* Dut. *luk,* happiness, fortune: Dan. *lykke;* Icel. *lukka,* luck]: a casual event, good or ill, affecting any one; fortune; chance. LUCKY, a. *lŭk'ĭ,* successful; fortunate. LUCK'ILY, ad. *-ĭ-lĭ,* fortunately; by good hap. LUCK'INESS, n. *-ĭ-nĕs,* good fortune; casual happiness. LUCKLESS, a. *-lĕs,* without good luck; unsuccessful. LUCK'LESSLY, *ad. -lĭ.* LUCK'LESS-

NESS, n. *-nĕs,* state of being unlucky.—SYN. of 'lucky': prosperous; happy; auspicious.

LUCKIE, n. *lŭk'ĭ* [Icel. *hluki,* an old woman]: in *Scot.,* an old or elderly woman; a grandmother; the mistress of an ale-house.

LUCK'NOW: city, cap. of Oudh, British India; 360 ft. above sea-level, on the right or s.w. bank of the Gumti, by which it has navigable communication upward for many miles, and downward all the way to the Ganges; lat. 26° 52′ n., and long. 81° e.; 610 m. from Calcutta. The place is connected with the opposite side of the river by four bridges. Though Lucknow does not appear to contain any very ancient buildings, it is yet understood to be older than any one of the other great cities of India, claiming to have been founded by Lakshmana, brother of Rama. The middle portion, which may be said to represent the original town, contains, with the exception of a few brick-houses, little but mud walls and straw roofs. On either side of these central hovels are the handsomer portions of Lucknow, generally dating, however, no further back than 1775. The principal buildings are: the Kaiserbagh palace, built in 1850, now occupied as government offices and forming a gorgeous pile of domes, pinnacles, terraces and fountains; the Imâmbara or holy palace, where Asuf ud Douelah is buried, now an arsenal; the great mosque or Jama Masjid; and the Hoseinalad or small Imâmbara with the mausoleum of Mohammed Ali. The Martinière College for half-caste children is a striking building founded by Claude Martin, a French soldier who became a general in the East India Company; other educational institutions include Canning College and several English schools, libraries and mission churches. As an illustration at once of manners and of government, all classes, until the annexation of Oudh in 1856, were wont to go fully armed, the shop-keepers being equipped with swords and shields. In connection with the mutiny of 1857, Lucknow was the point of foremost interest, surpassing every spot in the energy and obstinacy of its defense against the insurgents, and almost equalling Delhi itself in the grandeur and brilliancy of the operations, which recovered it, after a temporary abandonment, from the rebels. Pop. 264,000.

LUCON', or LUZON'. See LUZON; PHILIPPINE ISLANDS.

LUCRATIVE, a. *lô'krā-tĭv* [F. *lucratif,* profitable—from L. *lucrātīvus;* It. *lucrativo*—from L. *lucrum,* gain: It. *lucro;* F. *lucre,* lucre]: gainful; profitable. LU'CRATIVELY, ad. *-lĭ.* LUCRE, n. *lô'kėr,* profit; gain in money—always in an ill sense.

LUCRETIA, *lū-krē'shĭ-a:* Roman matron, wife of Collatinus. Outraged by the son of King Tarquinius Superbus, she stabbed herself B.C. 507. The tragedy occasioned a revolution, in which the Tarquins were driven from Rome and the republic was established.

LUCRETIUS, *lū-krē'shĭ-ŭs* (TITUS LUCRETIUS CARUS): Roman philosophical poet. Of the life of Lucretius we know almost nothing with certainty, as he is mentioned merely in a cursory manner in contemporary literature. Hieronymus, A.D. 340—420, in his translation of the Chronicle of Eusebius (264-340), gives the date of his birth B.C. 95 (according to others, 99); but he does not specify the source from which his statement is derived. It is alleged, further, that Lucretius died by his own hand, in the 44th year of his age, having been driven frantic by a love-potion which had been administered to him; that he composed his works in the intervals of his madness, and that these works were revised by Cicero. Donatus (Life of Virgil), on the contrary, affirms that his death occurred B.C. 55, on the very day on which Virgil assumed the *toga virilis*. The stories of the philtre, the madness, the suicide, and the revision of the works by Cicero, rest on very insufficient authority, and must be received with extreme caution. The peculiar opinions advanced by Lucretius would render him specially obnoxious to the early Christians, and it is possible that the latter may have been too easily led to attribute to him a fate which, in its mysterious nature and melancholy termination, was deemed a due reward for the bold and impious character of his teachings. The great work on which the fame of Lucretius rests is that entitled *De Rerum Natura,* a philosophical didactic poem in six books, dedicated to C. Memmius Gemellus, published about B.C. 56. Lucretius was a reverent follower of the doctrines of Epicurus (q.v.), and his poem is in large measure an exposition of the physical, moral, and religious tenets of that philosopher. The great aim of the poet was to free his countrymen from the trammels of superstition, and to raise them above the passions and the weaknesses of man's natural condition. With his master, Epicurus, Lucretius adopted the atomic theory of Leucippus, which taught that certain elementary particles, existing from all eternity, and governed by fixed laws, combined to form the universe of matter; that the existence and active interference of a supreme overruling deity was not necessary to be supposed in order to account for the marvellous and abnormal in nature; and that whatever *appeared* to be miraculous, was in reality not so, but was merely the result of certain fixed laws, which operated with unerring precision, and in a natural process. Regarded merely as a literary composition, the work of Lucretius stands unrivalled among didactic poems. The clearness and fulness with which the most minute facts of physical science, and the most subtle philosophical speculations, are unfolded and explained; the life and interest thrown into discussions in themselves repulsive to the bulk of mankind; the beauty, richness, and variety of the episodes interwoven with the subject-matter of the poem, combined with the majestic verse in

which the whole is clothed, render the *De Rerum Natura*, as a work of art, one of the most perfect which antiquity has bequeathed to us. It reveals a high degree of courage, sincerity, and strength. Lucretius' writings have a new interest in recent years, as they show the dealing of the ancient pagan thought with the same problems of existence with which modern science concerns itself. It is not difficult to detect the echo of his theories in eminent writers of the present day. For a fuller estimate of Lucretius and his poetry, see Prof. Sellars's essay in *The Roman Poets of the Republic* (Edin.) 1863. The *editio princeps* of L. was published at Brescia about 1473; only three copies are known to exist. The best editions of Lucretius are by Wakefield (London. 1796, 3 vols. 4to, and Glas. 1813, 4 vols. 8vo); by Forbiger (Leip. 1828, 12mo); by Lachmann (Berlin 1850, 2 vols.); and by Prof. Munro (3d ed. 1870). The *De Rerum Natura* has been translated into English verse by Thomas Creech (Lond. 1714, 2 vols. 8vo); and by John Mason Good (Lond. 1805-7, 2 vols., 4to); into prose by the Rev. J. S. Watson, M.A. (Lond. Bohn's Classical Library, 1851, post 8vo); and by Prof. Munro, at the end of his edition.

LUCUBRATION, n. *lô'kū-brā'shŭn* [L. *lucubrātĭōnem*, a working by lamp-light, or at night—from *lucubrārĕ*, to compose by lamp-light—from *lux*, light]: study in the night by lamp or candle light; any composition produced by meditation in retirement. LUCUBRATORY, a. *lô'kū-brā'tẽr-ĭ*, composed by night or by candle-light.

LUCULENT, a. *lô'kū-lĕnt* [L. *luculen'tus*, full of light —from *lux*, light]: clear; transparent. LU'CULENTLY, ad. *-lĭ*.

LUCULLITE, n. *lô-kŭl'līt:* a variety of black marble —so called because it was first brought by *Lucullus* to Rome from an island in the Nile.

LUCULLUS, *lū-kŭl'ŭs*, LUCIUS LICINIUS (surnamed PONTICUS): very distinguished Roman general: born, it is conjectured, about B.C. 110; d. abt. B.C. 57. In the first Mithridatic war, he commanded the fleet as legate of Sulla. B.C. 77, he filled the office of pretor, and immediately afterward held the administration of the province of Africa. B.C. 74 he was chosen consul with Marcus Aurelius Cotta, and got Cilicia for his province, while Cotta had Bithynia. Both consuls arrived in Asia about the close of B.C. 74. Cotta was soon utterly defeated by Mithridates, who had burst into Bithynia at the head of 150,000 troops, forced to take refuge in Chalcedon, and there was besieged by the victor. Lucullus, however, advanced to his relief at the head of 35,000 men, compelled Mithridates to raise the siege, and almost annihilated his army on its retreat. In B.C. 71 Pontus became subject to the Romans. The measures which Lucullus now introduced in the govt. of the province of Asia, to secure the provincials against the fearful oppres-

LUCRETIUS.

sions and extortions of farmers of the taxes and usurers, especially his fixing a uniform and moderate rate of interest for all arrears, show that he was a just, wise, and humane administrator; but though the cities of Asia were grateful for his clemency, the equestrian order in Rome (who had the farming of the taxes) became implacably hostile to him, and his own troops grew disaffected on account of the strictness of his discipline. In the spring B.C. 69, he marched into Armenia, with a small force of 12,000 foot and 3,000 horse, and gained a complete victory over Tigranes at the head of an army of 220,000 men. In the following year, he gained another great victory at the river Arsanias over a new army led against him by Tigranes and Mithridates; but the mutinous spirit of the legions—in spite of these splendid triumphs—daily increased, and when he wished to besiege Artaxata, capital of Armenia, the soldiers refused to advance further. After this, he could do nothing; not a soldier would serve under him; and he was superseded by Pompey, and left Asia B.C. 66. The cabals of his enemies so much prevailed, that he was three years in Rome before he obtained his triumph. In conjunction with the aristocratical party, he attempted to check the increasing power of Pompey, and the attempt caused the coalition known as the first triumvirate. But he was ill fitted to act as leader against such unscrupulous men, and soon withdrew altogether from political affairs. During his public career, he had acquired (but not unfairly) prodigious wealth; and he spent the remainder of his life surrounded by artists, poets, and philosophers, and exhibiting in his villas at Tusculum and Neopolis, and in his house and gardens at Rome, a luxury and splendor which became proverbial. A single supper—on particularly grand occasions—would cost him 50,000 denarii (more than $8,600). He collected a great library, and his pleasure-grounds were the wonder of his times. Toward the close of his life, his faculties began to decay and his property was placed under the management of his brother.

LUCUMO, n. *lô'kū-mō* [L.—from Etruscan *lauchme*, one inspired]: in *class. antiq.*, an appellation of the Etruscan princes and priests, corresponding to the Roman *patricius*, of the rank of the Conscript Fathers; hence, noble. The Romans, mistaking this title of dignity for a proper name, bestowed it on the son of Demaratus of Corinth, afterward Tarquinius Priscus, King of Rome.

LUCY, HENRY W.: English journalist: b. Crosby, near Liverpool, 1845, Dec. 5. He was for a time a member of the Shrewsbury *Chronicle* staff; in 1870-73 was connected with the *Pall Mall Gazette* (morning edition); and from 1873 with the *Daily News*, of which—with the exception of the period 1886, Jan.—1887, July, when he was editor-in-chief—he was the parliamentary correspond-

ent. He visited the United States in 1883, on his way around the world; an account of which journey appeared in the New York *Tribune* in the form of letters, subsequently collected as *East by West* (1885). On the death of Tom Taylor, Lucy continued the former's *Essence of Parliament* in *Punch* as *The Diary of Toby, M.P.* Among his books are *Men and Manners in Parliament* (1874); *A Diary of Two Parliaments* (1885-86); *Gladstone* (1896); *Peeps at Parliament* (1903).

LUCY, Sir Thomas: English landed proprietor: b. 1532; d. Charlecote 1600, July 7. He was educated by John Foxe (q.v.), the famous martyrologist; and he followed the Puritan sentiments of his tutor. In 1552 he came into possession of great estates in Warwickshire, in 1558-59 rebuilt the manor-house, which still exists, an excellent specimen of the Tudor style. He was knighted in 1565, and elected M.P. for Warwick in 1571 and 1584. His chief interest is in his alleged connection with Shakespeare (q.v.), whom he is said, in a story dating from the 17th century, to have prosecuted for deer-stealing. This story is now thought to be based on fact, though burdened with false details; and Shakespeare is believed to satirize him as Justice Shallow in *The Merry Wives of Windsor.*

LUDDITES, *lŭd'īts:* organized bands of rioters in England, in Nottingham, and the neighboring midland counties, 1811-16; named from Ned Lud, a person of weak intellect who in anger had destroyed a weaving-frame about 30 years before. The Luddites, under the distress caused by commercial depression and poor harvests, attributed their sufferings to the machinery which had displaced their manual labor; and destroyed the machinery. Improved harvests and strong repressive legislation, with several capital executions, ended their rioting.

LUDICROUS, a. *lô'dĭ-krŭs* [L. *ludĭcrus,* sportive, in jest—from *lūdus,* play, sport]: adapted to raise laughter; droll; burlesque. Lu'dicrously, ad. *-lĭ,* in a manner that may excite laughter. Lu'dicrousness, n. *nĕs,* the quality of exciting laughter. The ludicrous, see Laughter.—Syn. of 'ludicrous': sportive; laughable; ridiculous; comical or comic.

LUDINGTON, *lŭd'ĭng-ton:* city, cap. of Mason co., Mich.; on Lake Michigan at the mouth of Pere Marquette river. It is the terminus of the Pere Marquette railroad; about 85 m. n.e. of Milwaukee, Wis., 130 m. n.w. of Lansing, the capital of Michigan, and 61 m. from Manitowoc on the opposite side of the lake. It has regular steamer communication with the large ports on Lake Michigan, and direct freight connection, by ferry, with Manitowoc, Wis. It was settled in 1851, incorporated in 1867, and chartered as a city in 1874. The principal industries are connected with the manufacture and shipment of lumber. There are large lumber mills, game-

board factories, furniture and clothes-pin factories. Lumber, grain, flour, salt, and fruit are among the articles shipped to outside markets. The city has many guests in the summer months, attracted by the cool climate and opportunities for fishing in several lakes nearby. The Epworth League Training Assembly has nearby grounds and cottages. Pop. (1900) 7,166; (1910) 9,132.

LUDLOW, *lŭd'lō*, EDMUND: English leader of the republican party in the civil wars of Charles I.: b. Maiden Bradley, Wiltshire, about 1617; d. Vevay, Switzerland, 1692. He was graduated from Trinity College, Oxford, in 1636; fought at Edgehill in 1642; in 1646 was elected to parliament from Wiltshire; and in 1648, Dec., was one of the chief promoters of *Pride's purge*. He was one of the judges who signed the death-warrant of Charles I., sat in the council of state in 1649-50, and was lieutenant-general of the horse in Ireland and a commissioner for the civil government of that country in 1650-55. In 1656, upon the proclamation of Cromwell as lord protector, he declined to recognize Cromwell's authority, or to give security to keep the peace. Having been allowed to go into retirement in Essex, he was elected to parliament for Hindon in 1659, and upon the recall of the Long Parliament became a member of the committee of safety (May 7), of the council of state (May 14), and commander-in-chief of the Irish army, with rank of lieutenant-general (July 4). He was impeached upon the Restoration (1660), surrendered, was allowed his liberty on providing sureties, and escaped to Switzerland. His *Memoirs* (1698-99) furnish a good account of the opposition to Cromwell and of the factional troubles which overthrew the republic.

LUDLOW, FITZHUGH: American journalist: b. Poughkeepsie, N. Y., 1836, Sep. 11; d. Geneva, Switzerland, 1870, Sep. 12. He was graduated from Union College in 1856, in 1858-59 studied law in New York, in 1859 was admitted to the bar, but from 1860 devoted himself exclusively to literature. In 1860-61 he was connected with the *World* and the *Commercial Advertiser*, for a time was dramatic, art and musical critic of the Evening *Post*, to which he long contributed, and held a similar post as critic on the *Home Journal*. In 1863 he journeyed across the plains to Oregon and California, and in an article styled *Through Tickets to San Francisco*, laid out a route for a Pacific railroad largely identical with that later followed. He was among the earliest contributors to *Northern Lights* of Boston, upon the establishment of that magazine. Among his works are *The Hashecsh Eater: Being Passages from the Life of a Pythagorean* (1857); *Little Brother and Other Genre Pictures* (1857); *The Opium Habit* (1868); and *The Heart of the Continent: A Record of Travel* (1870).

LUDLOW, JAMES MEEKER, A.B., D.D., L.H.D.: American

Presbyterian clergyman and author; b. Elizabeth, N. J., 1841, Mar. 15. He was graduated from Princeton in 1861 from the Princeton Theological Seminary in 1864, entered the Presbyterian ministry and was pastor of the First Presbyterian Church of Albany 1864-68, and of the Collegiate Reformed Church of New York in 1868-77. His subsequent pastorates were that of Westminster Church, Brooklyn, N. Y. (1877-85) and that of the First Presbyterian Church of East Orange, N. J. (from 1886). In 1885 he declined the presidency of Marietta College (Ohio). His works are *My Saint John* (1883); *Concentric Chart of History* (1885); *The Captain of the Janizaries* (1886); *A King of Tyre* (1891); *That Angelic Woman* (1893); *History of the Crusades* (1896); *Baritone's Parish* (1897); *Deborah* (1901); *Incentives for Life* (1902); *Sir Raoul* (1905); *Jesse Ben David* (1907); etc.

LUDLOW, John Malcolm: English author: b. Nimach, India, 1821, Mar. 8. He was educated at the College Bourbon, Paris, became a barrister of Lincoln's Inn, London, in 1843, and practised as a conveyancer till 1874. He was chief registrar of Friendly Societies, 1874-91, and has published *Letters on the Criminal Code* (1847); *The Master Engineers and Their Workmen* (1852); *British India: Its Races and Its History* (1852); *Thoughts on the Policy of the Crown Toward India* (1859); *Sketch of the History of the United States from Independence to Secession* (1862); *President Lincoln Self-Portrayed* (1866); *The War of American Independence* (1876); etc.

LUDLOW, Roger: American colonial statesman: b. Dorchester, England, 1590, Mar. 7; d. Virginia about 1665. He was by profession a lawyer, came to Boston in 1630, was there assistant to the general court of Massachusetts in 1630-34, in 1634 became deputy governor, but was defeated for the post of governor, removed with a Massachusetts colony to Windsor, Conn., and was, it is thought, the first practising lawyer in Connecticut. In 1639 he was a member of the convention for preparing a constitution, and the document is believed to have been drafted by him. In Connecticut also he was made deputy governor, and here, too, John Haynes, who had defeated him for the governorship in Massachusetts, was again victorious in the gubernatorial election. In chagrin, Ludlow sought to evade his 'evil genius,' as he styled Haynes, by founding the town of Fairfield. Here he held each public office of any importance, was a commissioner to the New England congress, and revised the laws of Connecticut (1672). The Manhado Indians having threatened Fairfield, the citizens declared war against the Dutch, at whose instigation the savages were believed to be acting; and Ludlow was made captain of the forces. The New Haven general court, however, quashed this proceeding, and punished Ludlow's subordinate officers. Ludlow then

(1654) withdrew in high dudgeon with all the town records to Virginia, where he quite disappeared.

LUDLOW, WILLIAM: American soldier: b. Islip, Long Island, N. Y., 1843, Nov. 27; d. Convent, N. J., 1901, Aug. 30. He was graduated from West Point in 1864, entered the engineer service, was chief engineer of the 20th corps in the Georgia campaign (1864, July-Sep.), in 1864-65 was engineer of the army in Georgia, was assistant engineer on Sherman's staff in the 'March to the Sea' and in the Carolinas, and 1865, Mar. 13, was brevetted lieutenant-colonel, U.S.A., for meritorious conduct in the Carolinas campaign. After various service, he was chief engineer of the department of Dakota in 1872-76, engineer in charge of the Delaware river and harbor improvements and defenses in 1882-83, by authority of congress chief engineer of the Philadelphia water department in 1883-86, and was at different times in charge of lighthouse districts and engineering work. In 1895 he became president of the Nicaragua canal commission and Aug. 13 was promoted lieutenant-colonel of engineers in command of the lighthouse depot. Commissioned brigadier-general of volunteers 1898, May 4, he became engineer-in-chief of the American army in the field in the Spanish-American war, served in the Santiago campaign, was made major-general of volunteers 1898, Sep. 7, and from 1898, Dec. 13, to 1900, Apr., was military governor of Havana, in the rehabilitation of which city he took an important part. In 1899, Apr. 13, he became brigadier-general of United States volunteers, and in 1900, Jan. 21, brigadier-general United States army. As president of the board of officers appointed for the consideration of the establishment of an army war college, he visited France and Germany for purposes of study. In 1901 he was ordered to the Philippines as commander of the department of Visayas, but immediately returned on sick-leave. He wrote *Explorations of the Black Hills and Yellowstone Country;* and *Report of the United States Nicaraguan Canal Commission.*

LUD'LOW FORMA'TION: uppermost division of the Silurian Strata (q.v.), consisting of an extensive series of indurated argillaceous beds, with bands of dark-gray argillaceous limestone. The town of Ludlow, England, stands upon the higher strata of this formation.

LUDUS HELMONTII, n. *lū-dŭs hĕl-mŏn'shĭ-ī* [from Jan Baptista Van *Helmont,* Belgian chemist and physician of the 17th c., who believed in the efficacy of such stones]: calcareous stone, of unknown nature, used by the ancients in calculous affections. The term was applied also to every species of calculous concretion occurring in the human body.

LUDUS PARACEL'SI [from *Paracelsus* (q.v.)]: kind of cubical pyrites, named from resemblance in shape to a die; esteemed as a remedy in calculus. See LUDUS HELMONTII.

LUDWIG SALVATOR VON TOSCANA, *lôd'vĭch sâl-vâ'tōr fōn tōs-kâ'nâ*, ARCHDUKE OF AUSTRIA: Austrian traveler: b. Florence 1847, Aug. 4. He was the son of Leopold II., Grand Duke of Tuscany. His principal writings, all illustrated by himself and most of them published anonymously, are: *Levkosia, Capital of Cyprus* (1873); *Yacht Voyage to the Syrtes* (1874); *Los Angeles in Southern California* (2d ed. 1885); *The Caravan Route from Egypt to Syria* (1878); *The Balearic Islands*, superbly illustrated (7 vols., 1869-91); *Around the World Without Intending It* (4th ed. 1886); *Paros and Antiparos* (1887); *The Lipari Islands* (1893).

LUDWIG I., *lôd'vĭch*, KARL AUGUST, King of Bavaria: 1786, Aug. 25—1868 (reigned 1825-48); eldest son of King Maximilian Joseph. In 1810 he married Princess Theresa of Saxe-Hildburghausen. As crown prince, he took little part in politics, but busied himself in science and the fine arts, and lived very economically, in order that he might be able to spend large sums in forming a magnificent collection of masterpieces of sculpture known as the Glyptothek. He commenced his reign by granting some reforms. His reign was distinguished by the encouragement of the fine arts, and the erection of magnificent public buildings; he also inaugurated the first railway in Germany from Nuremburg to Furth—and executed the fine canal *Ludwigskanal*, which unites the Danube and the Maine. But it was no less characterized by the prevalence of ultramontane influence, intolerance toward all who did not belong to the Church of Rome, and contempt of constitutional rights and forms, while the king's conduct gave great occasion of scandal, particularly in his connection with the dancer Lola Montez (created Countess of Landsfeldt). On account of the revolutionary disturbances 1848, Feb. and Mar., Ludwig resigned the crown in favor of his eldest son, Maximilian.

LUES, n. *lô'ēz* [L. *lŭēs*, pestilence in man or beast]: poison; pestilence; disease.

LUFF, n. *lŭf* [Dut. *loef*, a rowlock or oar-pin: OE. *loof*, the large oar or paddle used as a rudder: comp. Icel. *löpp*, the paw of an animal; *lofi*, the flat hand]: the part of a ship toward the wind; the weather-gage; the foremost edge of a fore-and-aft sail; the roundest part of a vessel's bow: V. to turn the head of a ship toward the wind. LUFF'ING, imp.: N. the act of sailing a ship close to the wind. LUFFED, pp. *lŭft*. LUFF-TACKLE, a large movable tackle. TO LUFF ROUND, or TO LUFF A-LEE, to throw the ship's head into the wind. TO SPRING HER LUFF, to yield to the helm by sailing nearer the wind.

LUFFER, n. *lŭf'fėr*. See LOUVRE.

LUG, n. *lŭg* [Swiss, *lugg*, loose, slack; *luggen*, to be slack: Sw. *lugga*, to pull one by the hair—from *lug*, the forelock or hanging hair in front of the head: Icel. *loka*, to hang or drag]: that which flaps or hangs loose; the

flap or hanging portion of the ear; in *Scot.*, the ear itself; that which projects, as an ear; a small fish; a sea-shore worm: V. to haul; to drag; to pull along by an ear, or any loose part employed as a handle. LUG'GING, imp. LUGGED, pp. *lŭgd.* LUGGAGE, n. *lŭg'gāj, literally,* heavy, bulky articles that have to be pulled or dragged, not carried; anything cumbersome and heavy to be carried; the trunks, packages, etc., of a traveller.

LUGANO, *lô-gâ'nō:* town in the canton of Ticino, Switzerland, on the n.w. shore of the lake of Lugano. It is entirely Italian in character, with dingy and dirty arcaded streets; but its environs display all the richness of Italian scenery. Lugano contains several factories for throwing silk, and is the seat of a flourishing transit trade between Switzerland and Italy. *Monte Salvadore* in the vicinity affords a magnificent view. Its principal edifices are several churches, one, Santa Maria degli Angioli, contains a fresco of the *Passion,* by Bernardino Luini, convents, a hospital, and a theatre. Till 1881 it was, alternately with Locarno and Bellinzona, the seat of the legislature of the canton of Ticino. Pop. about 10,000.

LUGA'NO, LAKE OF: in the s. of the canton of Ticino, Switzerland, three of its arms reaching into the Italian territory. Its surface is 889 ft. above sea-level, and its greatest length is about 20 m.; but from its exceedingly irregular shape, it is nowhere more than 1½ m. broad. Its scenery is as beautiful as, and more rugged than, that of Lakes Como and Maggiore. Its outlet is westward into Lago Maggiore.

LUGDU'NUM. See LYONS.

LUG'GAGE of Travellers, in Law: though in a certain sense attached to the person and under one's immediate care and not paid for separately, nevertheless protected by the contract; so that carriers of all kinds are bound to carry luggage safely, and, if it is lost, must pay damages for it. The usual term for luggage in the United States is Baggage. Owing to the established rule, that luggage is not separately paid for, travellers sometimes abuse this privilege, and carry merchandise as part of and mixed with their luggage to avoid extra payment. Most railway companies, accordingly, by their by-laws fix a limit as to weight for this luggage, and it is presumed that luggage consists only of wearing-apparel or things for personal use, and not articles intended for sale. Though carriers or railway companies cannot be rid of liability for this luggage by giving any notice or making a by-law to that effect, yet it is competent for all carriers to specify certain articles of merchandise, which, whether they are mixed with luggage or not, must be separately paid for, otherwise they will not be responsible. Such are gold or silver manufactured, jewelry, watches, clocks, trinkets, stamps, maps, writings, title-deeds, paintings, pictures,

glass, china, silks, furs, and lace, provided these exceed a certain value. Unless notice of such articles included in the luggage is given to the carriers or company, and an increased rate paid, they will not be responsible for the loss. With this exception the carrier is bound to receive, carry securely, and deliver the luggage of travellers, notwithstanding the traveller has it in his personal charge. Thus, when a railway porter, on the arrival of the train, carried a traveller's luggage to a cab and lost it in the way, the railway company was held responsible. A carrier has a lien on the luggage for the fare, if not paid, and can keep it till such fare is paid; but as prepayment is now the universal practice, this remedy is seldom resorted to.

LUGGER, n. *lŭg'gėr* [Dut. *logger:* probably from *lug,* the sail being easily hoisted by a pull]: small vessel with two or three masts, and a lug-sail on each, and occasionally a topsail. The rigging is light and simple, and the form of the sails enables a lugger to beat close up to the wind. LUGSAIL, quadrilateral sail used in luggers and open boats. It is bent, by the upper side, upon a straight yard, which is slung on the mast in an oblique position, one-third to windward, two-thirds on the leeward side of the mast.

LUGUBRIOUS, a. *lô-gū'brĭ-ŭs* [L. *lugūbris,* mournful: It. and F. *lugubre*]: mournful; sorrowful; indicating sorrow. LUGU'BRIOUSLY, ad. *-lĭ.*

LUG-WORM, *lŭg'wėrm,* or LOB-WORM, *lŏb'wėrm* (*Arenicola piscatorum*): one of the *Dorsibranchiate Annelidæ,* extremely abundant on British shores, and very valuable as bait to fishermen. It inhabits the sand, on the surface of which, after the tide has retired, innumerable coils are always to be seen, the *casts* of this worm. It is larger than the earthworm, sometimes 12 inches long, is destitute of eyes, has no distinct head, but is much thicker at the extremity where the mouth is situated than at the other. The mouth has no jaws, nor teeth, nor tentacles. There are two rows of bristles along the sides, organs of locomotion, by means of which the lug-worm works its way through the sand. About the middle, it has on each side six tufts of gills. When touched, it exudes a yellowish fluid; and an exudation from its body slightly agglutinates the particles of sand, so as to form a tube through which it passes and repasses. It is remarkable among annelids for the red color of the blood, which imparts a fine crimson to the gill-tufts. See ANNELIDA; LOB-WORM.

LUINI, *lô-ē'nē* (or LOVINO DA LUINI, *lō-vē'nō dâ lô-ē'nē*), BERNARDINO: leading painter of the Lombard school founded on the style of Leonardo da Vinci: b. abt. 1465, at Luini, near the Lago Maggoire; d. prob. abt. 1540. He is generally stated to have been the principal pupil of Leonardo da Vinci, but it appears rather that he was educated under Stefano Scotto; and though, from having

attended the Acad. of the Fine Arts founded at Milan by Ludovico il Moro, of which Leonardo was director, he may be styled a pupil of that great artist, yet it is not proved that he received direct instruction from him. Though Luini occasionally imitated the style and execution so closely as to deceive experienced judges, his general manner had a delicacy and grace sufficiently original and distinct from that of Leonardo. Still his works have been often attributed to the latter, to increase their value. This charming painter executed numerous works at Milan in oil and fresco. His frescoes at Lugano, Saronno, and Pavia are justly admired. His works accord with the natural sweetness of his character: all those on sacred subjects have a peculiarly religious grace as distinct from the usual ecclesiastical mode. Most of his productions are found in Upper Italy. Many of his easel pictures are to be seen in the Ambrosiana (library), Brera (palace), and in private galleries at Milan; others in the cathedral at Legnano. In the Uffizi at Florence is his *Beheading of John the Baptist.* His chief work is *The Enthroned Madonna with Saint Anthony and Saint Barbara* (1521), a magnificent fresco in the Brera. Other examples of this painter are now in the Palazzo Sciarra at Rome, as well as in the Louvre, the National Gallery of London, and the Berlin Museum.—He had a brother, AMBROGIO, who imitated his style, and his two sons also were painters.

LUISE, *lô-ē'zëh,* AUGUSTE WILHELMINE AMALIE, Queen of Prussia: 1776, Mar. 10—1810, July 19; b. Hanover, where her father, Duke Karl of Mecklenburg-Strelitz, was commandant. She was married to the Crown-prince of Prussia, afterward Frederick William III., 1793, Dec. 24. After his accession to the throne, she became exceedingly popular, her great beauty being united with dignity and grace of manners, and with much gentleness of character and active benevolence. This popularity increased in consequence of her patriotism, energy, and resolution, mixed with sweet and patient dignity, during the period of national calamity which followed the battle of Jena, which brought Prussia absolutely at the mercy of Napoleon. She was unexpectedly taken ill, and died when on a visit to her father in Strelitz. Few queens in modern times have been so sincerely mourned. Her memory is cherished in Prussia: the Luise Foundation for education of girls was founded in honor of her, and the Order of Luise in that kingdom commemorates her.

LU'ITPRAND, or LIUT'PRAND, King of Lombardy. See LOMBARDY.

LUKE, *lūk* (*Lucas*): writer of the third gospel, and of the Acts of the Apostles, according to the almost unanimous testimony of the early church: said by the church Fathers to have been born at Antioch in Syria, and to

have been a physician. He was probably by descent a gentile. Very little is known of him; the name occurs but three times in the New Test. (Col. iv. 14; II. Tim. iv. 11; Philem. 24); and in these three passages the evangelist Luke is undoubtedly referred to. Traditions concerning him are abundant and of little value; e.g., that he was a painter, that he died a martyr, that he was one of the two disciples on the road to Emmaus, that he was one of the 70 sent out by the Lord Jesus. It appears from one of the three passages above noted that he was a physician, and that he was not born a Jew (see Col. iv. 11-14). It is plainly to be inferred from Acts xvi. 10 that Luke was the associate of Paul in his second evangelistic expedition A.D. 52, joining him at Troas and accompanying him into Macedonia. He is traced also as in company with Paul on his third missionary tour; and as his companion on his final journey as prisoner to Rome. Thus Luke was the apostle's faithful and constant friend. Little beyond these few facts is known. His festival is commemorated by the Rom. Cath. Church Oct. 18.

LUKE, THE GOSPEL ACCORDING TO: one of the canonical books of the New Testament; written to present a narrative of the birth of the Lord Jesus and of chief events in his life, and of his death, probably for the use especially of the Greek Christian converts, of whom Luke is supposed to have been one. Its sources were, doubtless, accounts personally received from Paul and other apostles (Col. iv. 10, 14; Acts xxi. 8, 17), Luke's own observation, and many documents previously written (Luke i. 1), whose materials Luke used under apostolic (especially Pauline) guidance. The early testimony is practically unanimous to the authenticity of this gospel. Some who express doubt in recent years base their doubt on a theory merely. The general view as to its *date* has been, and is, that it was written before the destruction of Jerusalem, which was completed A.D. 70. While this is probable, it cannot be positively asserted. It is certain that its date was, at the latest, not long after that event.

LUKE OF LEYDEN. See LEYDEN, LUCAS VAN.

LUKEWARM, a. *lôk'wawrm* [Icel. *hlæ-vedr;* Low Ger. *slukwarm,* lukewarm: W. *llug,* partly, half: Manx *lieh;* Gael. *leth,* Ir. *leath,* half, and *warm*]: only moderately warm; tepid; not zealous; cold; indifferent. LUKE'WARMLY, ad. *-lĭ.* LUKE'WARMNESS, n. *-nĕs,* a moderate heat; indifference; coldness. *Note.*—In popular usage *loo-warm* is employed for *lukewarm,* and agrees with the OE. *lew,* and Ger. *lau,* lukewarm; Ger. *lau-warm,* tepid.

LULL, v. *lŭl* [Norw. *lulla,* to sing to sleep: O.Dut. *lullen,* to sing in a humming voice: Ger. *lallen,* to sing by only repeating la, la; Serv. *lyu,* cry to a child while rocking it: Esthon. *laul,* a song: L. *lallo,* I sing la, la, to put a child to sleep]: to compose to sleep by pleasing

sounds; to cause to rest; to compose; to cease; to quiet; to become calm: N. power or quality of soothing; a season of quiet; cessation; abatement. LULL'ING, imp. LULLED, pp. *lŭld.* LULLABY, n. *lŭl'ă-bī,* a song to quiet babes or set them to sleep; that which quiets. LULL'ABIES, n. plu. *-bīz.*

LULL, RAMON. See LULLY, RAYMOND.

LULLY, *lŭl'ī,* RAYMOND: 'the enlightened doctor': 1235—1315; b. Palma, in Majorca. In his youth, he led a dissolute life, and served some time as a common soldier; but a complete revulsion of feeling taking place, he withdrew to solitude, and gave himself up to ecstatic religious meditations and the study of the difficult sciences. In this fervid and enthusiastic state of mind, he formed the project of a spiritual crusade for conversion of the Mussulmans, an idea that he never afterward abandoned. In pursuance of this project, he commenced an earnest study of theology, philosophy, and the Arabic language; and, after some years, published his great work, *Ars Generalis sive Magna,* which has so severely tested the sagacity of commentators. This work is the development of the method of teaching known subsequently as the 'Lullian method,' a fantastic system of logic intended to afford a kind of mechanical aid to the mind in the acquisition and retention of knowledge, by a systematic arrangement of subjects and ideas. Lully moreover expected that the force of its inferences would carry conviction to the minds of the heathen. Like all such methods, however, it gave little more than a superficial knowledge of any subject, though it was of use in leading men to perceive the necessity for an investigation of truth, the means for which were not found in the scholastic dialectics. Lully subsequently published another remarkable work, *Libri XII. Principiorum Philosoph. contra Averroistas,* and, full of the principles which he had developed in this book, he went to Tunis, at the end of 1291, or the beginning of 1292, to argue with his opponents face to face. He drew large crowds of attentive hearers, and held disputations with learned Mohammedans, who, however, were as anxious to convert him as he to convert them, and the result, as might have been expected, was that little impression was made by either of the parties. Finally, however, Lully was thrown into prison, and condemned to banishment. After lecturing at Naples several years, he proceeded to Rome; thence to his native island of Majorca, where he labored for the conversion of the Saracens and Jews; thence to Cyprus and Armenia, zealously exerting himself to bring back the different schismatic parties of the oriental church to orthodoxy. In 1306-7, he again sailed for Africa, entered the city of Bugia (then the capital of a Mohammedan empire), and undertook to prove the truth of Christianity. A tumult arose, in which Lully nearly

lost his life. He was again thrown into prison, and treated with great severity; yet so high an opinion was entertained of his abilities that the chief men of the place were anxious that he should embrace Mohammedanism, and promised him if he did so the highest honors. But to Lully, whose intellect and feelings were both enlisted in the cause of Christianity, this was impossible. After some time he was again banished from the country, and landed (after being shipwrecked) near Pisa. He subsequently went to Paris, and lectured against the principles of Averroes; he also induced the pope to establish chairs for the Arabic, Chaldee, and Hebrew languages in all cities where the papal court resided, and also at the universities of Paris, Oxford, and Salamanca. But his missionary zeal could be satiated only by martyrdom. In 1314 he sailed once more for Africa, and proceeded to Bugia, where he threatened the people with divine judgments if they refused to abjure Mohammedanism. The inhabitants were furious, dragged him out of the city, and stoned him, inflicting such injuries that after his escape to a Genoese vessel he died on the voyage home. The Mayence (10 vols. 1721-42) ed. of his works includes several books on alchemy, whose authorship seems to have been without reason ascribed to him. See Prantl's *Gesch. der Logik*, and Erdmann's *Gesch. der Philosophie.*

LUM, n. *lŭm* [Gael. *laom*, a blaze, a fire: W. *llumon*, a chimney]: in *Scot.*, the fireplace; the chimney.

LUMACHEL, n. *lô'mă-kĕl*, or LU'MACHEL'LA, n. *-kĕl'lă* [It. *lumachella*, a little snail]: a variety of marble full of fossil shells, exhibiting beautiful iridescent colors, sometimes a deep red or orange; also called *fire-marble* —also LUMACHELLO, n. *lô'mă-chĕl'lō*, LU'MACHEL'LI, n. plu. *-chĕl'lī.*

LUMBAGO, n. *lŭm-bā'gō* [F. *lumbago*—from mid. L. *lumbago*—from L. *lumbus*, the loin or haunch.—*Note: ago* may be only a corruption of Gr. *algos*, pain]: a rheumatism or rheumatic pain in the loins and small of the back. LUMBAGINOUS, a. *lŭm-băj'ĭ-nŭs*, pertaining to lumbago. LUMBAR, a. *lŭm'bĕr* [L. *lumbus*, the loin]: pertaining to the loins. LUMBAR REGION, the lower part of the trunk.—*Lumbago* is often recognized first by the occurrence of a sharp stabbing pain in the loins on attempting to rise from the recumbent or sitting position. It is sometimes so severe as to confine the patient to bed and in one position, from which he cannot move without intense suffering; but in milder cases he can walk, though stiffly and with pain, and usually with the body bent more or less forward.

The causes are the same as those of sub-acute rheumatism generally. The disease may arise from partial exposure to cold, especially when the body is heated, and violent straining will sometimes induce it. In persons

with a strong constitutional tendency to rheumatism, the slightest exciting cause will bring on an attack of lumbago.

The treatment must vary with the intensity of the affection. In most cases, a warm bath at bedtime, followed by 10 grains of Dover's powder, will speedily remove it; and bicarbonate of soda, in 20-grain doses repeated every hour or half hour, is also a useful remedy. Locally a mixture of chloroform and soap-liniment will be found serviceable. Counter-irritation by means of an electro-cautery, or of a hot iron, of a temperature sufficiently high to redden the skin but not to blister, often brings prompt relief.

LUMBER, n. *lŭm'bėr* [originally the *Lombard-room*, or the place where the *Lombard* banker and broker stowed away his pledges: comp. O.Dut. *lummer*, a hindrance: Dut. *belemmern*, to encumber, to impede]: *literally*, things which cause to stumble; household odds and ends, and unused or refuse furniture, confusedly thrown together in a room called the *lumber-room;* bulky or cumbersome things thrown aside: V. to heap together in disorder; to encumber or impede the free motion of. LUM'BERING, imp.: ADJ. filling with lumber. LUM'BERED, pp. *-bėrd.* LUMBER-ROOM, a room for the reception of useless or unneeded things.

LUMBER, v. *lŭm'bėr* [prov. Sw. *lomra*, to resound: Icel. *hljómr*, a sound: Dut. *rommelen*, to rumble]: to move heavily and laboriously; to make a rough noise, as a heavy rolling object. LUM'BERING, imp.: ADJ. moving heavily: N. the motion or jolting of anything that moves heavily. LUM'BERED, pp. *-bėrd.*

LUMBER, n. *lŭm'bėr* [from LIMBER, which see]: sawn or split timber: V. in *Canada* and *United States*, to cut down timber and prepare it for market. LUM'BERING, n. the act or employment of cutting down and preparing timber for market. LUM'BERER, n. *-bėr-ėr*, one who fells and shapes timber; in *N. Amer.*, a backwoodsman. The chief lumber trees of the United States are the white pine and Norway pine of Michigan and Wisconsin; the yellow pine of the southern states; the fir, cedar, spruce, and hemlock of Washington and Oregon; the redwood, sugar, and white pine of California; the spruce and hemlock of the east; the cypress of the south and the Ohio River valley; the oak of Indiana, Ohio, Missouri, etc.; and the black walnut, white ash, maple, birch, elm, cherry, mahogany, chestnut, sycamore, beech, poplar, basswood, gum or satin walnut, cottonwood, etc., which are scattered through many sections. These trees are described under their proper headings. See also TIMBER TREES; FORESTRY; FOREST LAWS; ARBORICULTURE.

LUMBRIC, n. *lŭm'brĭk* [L. *lumbrīcus*, a worm]: a worm. LUMBRICAL, a. *lŭm'brĭ-kăl*, resembling a worm: N. one of four muscles of the fingers and toes—so named

from its resembling in shape a worm. LUMBRICALES, n. plu. *lŭm'brĭ-kā'lēz.*

LUMINARY, n. *lô'mĭ-nėr-ĭ* [F. *luminaire,* a luminary —from mid. L. *luminārĕ:* Sp. and It. *luminaria*—from L. *lumen,* light]: any body or thing which gives light; one of the celestial orbs; any one who enlightens or instructs. LU'MINOUS, a. *-nŭs,* shining; emitting light; clear; lucid; perspicuous. LU'MINOUSLY, ad. *-lĭ.* LU'MINOUSNESS, n. *-nŭs-nĕs,* or LU'MINOS'ITY, n. *-nŏs'ĭ-tĭ,* the quality of being bright or shining; clearness.—SYN. of 'luminous': bright; shining; resplendent; splendid; brilliant; lustrous; phosphorescent.

LUMINIFEROUS, a. *lô'mĭ-nĭf'ėr-ŭs* [L. *lumen,* light; *fero,* I produce]: conveying or producing light.

LUMINOS'ITY OF ORGANIC BEINGS: property of emitting light, possessed by many organisms both vegetable and animal. See PHOSPHORESCENCE.

LUM'MIS, CHARLES FLETCHER, A.B., LITT.D.; American author: b. Lynn, Mass., 1859, March 1. He was graduated from Harvard in 1881, went to Los Angeles, Cal., there was an editor of the *Daily Times* (1885-7), and later became editor of the monthly *Out West.* He spent five years among the Pueblo Indians of New Mexico, studying their speech and customs. Among his writings are: *A Tramp Across the Continent* (1892); *The Land of Poco Tiempo* (1893); *The King of the Broncos* (1897); *The Enchanted Burro* (1897); *The Awakening of a Nation* (1898); and the collection, *The Man Who Married the Moon, and Other Pueblo Indian Folk-Stories* (1894); etc.

LUMMOX, n. *lŭm'oks* [perhaps connected with *lump*]: *colloq.,* a fat, unwieldy, stupid person.

LUMP, n. *lŭmp* [Norw. *lump,* a thick piece: Icel. *klumbr;* Dan. *klump,* a lump: Dut. *lompe;* Ger. *lumpen,* a rag, a lump: a small mass of solid matter having no definite shape; the whole taken together; a cluster: V. to throw into a mass; to take in the gross without the distinction of particulars. LUMP'ING, imp.: ADJ. large; heavy; great. LUMPED, pp. *lŭmpt:* ADJ. thrown into a mass or sum. LUMPERS, n. plu. *lŭmp'ėrz,* laborers employed by merchant-ships to load and unload. LUMPEN, n. *lŭmp'ĕn,* a long fish of a greenish color, marked with lines. LUMP'ISH, a. *-ĭsh,* heavy; like a lump; gross; inactive. LUMP'ISHLY, ad. *-lĭ.* LUMP'ISHNESS, n. *-nĕs,* state of being lumpish. LUMPY, a. *lŭmp'ĭ,* full of lumps. LUMP'INESS, n. *-nĕs,* state of being full of lumps. LUMPS, n. plu. *lŭmps,* a kind of bricks or tiles; dockyard barges. LUMPFISH (see LUMPSUCKER). LUMP-SUGAR, loaf-sugar broken into pieces.

LUMP'KIN, JOHN HENRY: American jurist: b. Oglethorpe county, Georgia, 1812, June 13; d. Rome, Ga., 1860, June 6. He studied at Franklin College of the

University of Georgia and at Yale; after a course in law was admitted to the bar in 1834, March, entered practice at Rome, Floyd county, Ga., was a member of the Georgia house of representatives in 1835, and was solicitor-general of the Cherokee circuit in 1839-42. As a Democrat he sat in the United States congress in 1843-9 and 1855-7; and in 1849-52 he was judge of the Cherokee circuit court. In 1857 he was Democratic candidate for governor of Georgia, but was defeated. In 1860 he was a delegate to the state Democratic convention (June) and to the Democratic national convention held at Charleston, S. C., and Richmond, Va. (April 23; June 21).

LUMPKIN, JOSEPH HENRY: American jurist: b. Oglethorpe county, Georgia, 1799, Dec. 23; d. Athens, Ga., 1867, June 4. He was a brother of Wilson Lumpkin (q.v.). He was graduated from the College of New Jersey (now Princeton) in 1819, studied law in the office of Judge Cobb at Athens, was admitted to practice in 1820, October, and practiced at Lexington, Ga., until 1844. In 1824 and 1825 he represented Oglethorpe county in the state legislature of Georgia, and from 1845 was chief justice of the Georgia supreme court. He was one of the chief organizers of the Lumpkin Law School of the University of Georgia, and occupied the chair of law in the school in 1859-61. He resumed the professorship in 1865, and retained it until his death. In 1833 he assisted in the compilation of the penal code of Georgia. Both as an advocate in criminal cases and as a judge he is described as exceedingly able. For many years he was prominent in the temperance movement.

LUMPKIN, SAMUEL: American jurist: b. near Lexington, Oglethorpe county, Ga., 1848, Dec. 12; d. Washington, Wilkes county, Ga., 1903, July 18. He was graduated from the University of Georgia in 1866, was admitted to the bar in 1868, was solicitor-general of the Northern Georgia circuit in 1872-6, and state senator in 1878-80. In 1885-90 he was judge of the superior court of the Northern circuit, on Jan. 1, 1891, became associate justice of the supreme court of Georgia, and on Jan. 4, 1897, presiding justice of the second division of that court.

LUMPKIN, WILSON: American politician: b. Pittsylvania county, Virginia, 1783, Jan. 14; d. Athens, Ga., 1870, Dec. 28. He was a brother of Joseph Henry Lumpkin (q.v.). He removed to Oglethorpe county, Georgia, in 1784; in 1797 was made a copyist in the superior court of Oglethorpe county; was admitted to the bar, and practiced at Athens, Ga. He was elected several times to the lower house of the Georgia legislature, and also served in the state senate. In congress he sat as a representative from Georgia in 1815-17 and 1827-31. In 1831-5 he was governor of Georgia (two terms). During his adminis-

tration the Cherokees were deported across the Chattahoochee, and the region previously occupied by them was subdivided into thirteen counties, the county and town (in Stewart county) of Lumpkin being named in his honor. From Dec. 13, 1837, to March 3, 1841, he was United States senator to fill a vacancy. In 1823 he was appointed by President Monroe to determine and map the boundary line between Georgia and Florida; and he was also a member of the first state board of public works appointed by the legislature. As state surveyor he laid out most of the lines of early Georgia railways.

LUMP'SUCKER, or LUMP'FISH (*Cyclopterus*): genus of fishes of family *Discoboli* (q.v.), having the head and body deep, thick, and short, the back with an elevated ridge, the fins rather small, and the ventrals united by a membrane so as to form a sucking disk.—The lumpsucker is found on the American and European coasts of the n. Atlantic, but more numerously in the seas of more northern regions. It has a grotesque and clumsy form, but its colors are very fine, combining various shades of blue, purple, and rich orange. It attains a considerable size, sometimes weighing seven pounds.

LUMPY JAW. See ACTINOMYCOSIS.

LUNA, PEDRO DE: anti-pope: b. Spain 1334; d. Peñiscola, Valencia, 1424. He was sprung from a noble family of Aragon, and, after entering the priesthood, became distinguished as a canonist, and was appointed professor in the University of Montpellier. He received a cardinal's hat in 1375 and was elected to Avignon as anti-pope in 1394. The conclave of cardinals annexed as a condition to his election, that he should resign if ever an opportunity occurred when, by so doing, he could put a stop to the schism. This he refused to do, although he was deposed by the Council of Pisa (1409), and by that of Constance (1417). Banished from Avignon, he retired to the fortress of Peñiscola, near Valencia, where he spent the rest of his life in excommunication.

LUNA, *lū'na* (the moon): among the Greeks *Selēnē*. Her worship is said to have been introduced among the Romans in the time of Romulus. She had a temple on the Aventine, one on the Capitol, and a third on the Palatine.

LUNA MOTH: one of the largest and most beautiful of the great American silkworm moths, *Tropæa luna*. Its general color is delicate green; there is a purple-brown band along the front edge of the fore wings, and a pair of richly colored ocelli upon each of both pairs of wings, the hinder pair of which terminate in long curving 'tails.' The caterpillar grows to a length of about three inches, and is pale bluish green with a pearl-colored head; it has a pale yellow stripe along each side of the body, and a transverse yellow line on the back.

LUNACY, n. *lô′nă-sĭ* [L. *luna*, the moon: F. *lunatique*, lunatic—from L. *lunatĭcus*, affected by changes of the moon, mad: It. *lunatico*, a madman]: mental derangement, formerly supposed to be dependent upon the moon's changes; insanity; madness in general (see LUNACY, in Law). LUNATIC, n. *lô′nă-tĭk*, one affected with lunacy; an insane or mad person: ADJ. mad; insane. LUNATIC ASYLUM, house specially built or set apart for the insane (see below).—SYN. of 'lunacy': madness; derangement; craziness; mania.

LU′NACY, in Law: involving question of fact as to its existence and extent; therefore requiring proof. The presumption is in favor of a man's sanity, even though he be born deaf, dumb, and blind; and if insanity is disputed, it always lies on the party alleging it to prove it. Sometimes a person in a state supposed to be that of a lunatic makes a contract, and is sued upon it; in such a case, he may set up as a defense that he was a lunatic, and the proof will consist of his conduct and actions at and previous to the time in question. If, however, the other party did not know of the L., and took no advantage, the lunatic will not be allowed to recover moneys paid by him in pursuance of his contract. Though the presumption is in favor of the sanity of a person, yet, when once insanity has existed, the presumption is reversed, and then the law presumes no lucid interval or restoration to sanity until it is proved; and it is extremely difficult to prove a lucid interval, for the law requires very clear and conclusive proof of that fact, and all the circumstances must be carefully scanned. It is difficult or impossible to define in words what is insanity or L., it being a negative state, and merely an inference from the acts, conduct, and bodily condition of the person. An idiot is said to be a person born with a radical infirmity of mind, and whose state is one of perpetual infirmity, incapable of cure or restoration; whereas a lunatic is one who is sometimes of good and sound mind, and sometimes not; he may have lucid intervals, and is assumed to be more or less capable of restoration to sanity. A person is said to be, in legal phraseology, of unsound mind, who is not an idiot, nor a lunatic, nor yet of a merely weak mind, but, by reason of a morbid condition of intellect, is as incapable of managing his affairs as if he were a lunatic. Though it is difficult to define L. or insanity, there are various tests more or less accepted in every-day life as strong evidence. Idiocy is accompanied by a vacant look, etc., while insanity is accompanied by some frenzy or extravagant delusion. The physiology of idocy and L. is a separate subject of investigation, and is a part of medical jurisprudence, to which a few medical men confine their attention, and their assistance is often required by courts of law when inquiring into this state of mind, though their theories are jealously scrutinized. As a general rule, an idiot or a lunatic is subject to civil incapacity. He cannot enter

into contracts or transact general business, and what he does is a nullity. Thus he cannot make or revoke a will, or enter into marriage, or act as an executor or administrator, or become a bankrupt, or be a witness in a court of justice, or vote at elections, etc. But, as a general rule, a lunatic is liable in damages for committing a wrong, such as a trespass, and he is liable for necessaries supplied to him, and he may be arrested for debt, and his property may be taken in such cases, as in the case of sane persons. With regard to criminal responsibility, the English judges, 1847—called on by the house of lords to state their opinion as to the right mode of putting the questions to a jury when the defense of insanity is raised—said that a person laboring under an insane delusion as to one subject is liable to punishment, if at the time of committing the crime he knew he was acting contrary to law. In general cases, to establish want of responsibility, it must be proved that the party accused was laboring under such a defect of reason, from disease of mind, as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know that he was doing what was wrong. Where the party is laboring under an insane delusion as to existing facts, and commits a crime in consequence thereof, it depends on the nature of the delusion whether he is excused. Thus, if he insanely believes that A intended to kill him, and he kills A, as he supposes, in self-defense, he would be exempt from punishment. But if his delusion was that A had inflicted a serious injury to his character and fortune, and he killed A in revenge for such supposed injury, then he would be liable to punishment. When a person is acquitted of crime on the ground of L., he is liable to be confined.

So long as a person is not actually declared insane or an idiot, he has a right to manage his own affairs; and formerly the only way in which he could be deprived of such right, was, in England, by a writ *de lunatico inquirendo*, issuing out of chancery, which authorized the empanelling of a jury to decide whether he was a lunatic or not. The practice has now been considerably altered, but, as a general rule, in England and the United States it is the law, that, unless a person has been officially declared a lunatic, he is still entitled to manage his own affairs. In the United States the question rests with the courts to decide; but courts do not concern themselves with the subject of L. except as it becomes necessary for their determining the competency or the responsibility of persons for acts on which they are required to give judgment. In Scotland there is recognized an intermediate state (see INTERDICTION, under INTERDICT: IMBECILITY); but in the United States no such state is legally recognized; hence, if a weak person is imposed on, it is treated merely as a case of fraud, the weakness forming an element of such fraud; but there is no legal machinery for restraining the natural

right, even of weak-minded persons, to do what they like with their property.

In general, though courts may sometimes be confused in application of the principle, the principle in law is that no L. is to be recognized that does not arise from bodily disease. No mere crime can be received as proof of L.: the L. must have independent proof. Drunkenness or passionate heat cannot be accepted as excuse, as though they were mere forms of L.: the courts are to decide the existence and the extent of L. in a given case, and so fix the measure of responsibility for the act in question. For the various kinds of mental alienation, see INSANITY: IMBECILITY.

LUNAR, a. *lô′nėr*, or LU′NARY, a. *-nėr-ĭ* [L. *lunāris*, of or belonging to the moon—from *luna*, the moon]: pertaining to the moon; caused or influenced by the moon. LUNARIAN, n. *lô-nā′rĭ-ăn*, an inhabitant of the moon. LUNATE, a. *lô′nāt*, or LU′NATED, a. formed like a half-moon; crescent-shaped. LUNA′TION, n. *-nā′shŭn*, one revolution of the moon; a lunar month. LUNAR-CAUSTIC [L. *luna*, the moon, being the old alchemical name for silver]: name for fused nitrate of silver, cast in the form of small cylinders, and used surgically. It is, when freshly prepared, of a whitish striated appearance; but on exposure to the air, the outer surface becomes decomposed, and blackens. Its uses in surgery are numerous. It is a helpful application to punctured, and especially to poisoned wounds. When applied to large indolent ulcers, it acts as a stimulant, and restores a more healthy action. It is used to remove and keep down spongy granulations (popularly known as proud-flesh) in wounds and ulcers, and to destroy warts. It has been applied with good effect to the pustules in small-pox, to cut short their progress and to prevent pitting. It is of great service as a local application in inflammatory affections and ulcerations of the mucous membrane of the mouth and throat. In fissured or excoriated nipples, its application gives great relief. It should be insinuated into all the cracks, and the nipple afterward washed with tepid milk and water. It is also extensively employed in diseases of the eye, of the genito-urinary organs, and in some forms of skin-disease. LUNAR CYCLE (see METONIC CYCLE, under METONIC). LUNAR MONTH, the time of one revolution of the moon, equal to 29 days, 13 hours, nearly. LUNAR THEORY, term employed to denote the *a priori* deduction of the moon's motions from the principles of gravitation: see MOON.

LUNATIC ASYLUM.

LU'NATIC ASY'LUM: abode provided for the insane, with a view to their restraint and cure. The first hospitals for the insane of which history or tradition makes mention, were the sacred temples in Egypt. In these, it is said, the disease was mitigated by agreeable impressions received through the senses, and by a system resembling the rivalling the highest development of moral treatment now practiced. Monasteries appear to have been the representatives of such retreats in the mediæval Christian times; but restraint and rigid asceticism characterized the management. Out of conventual establishments grew the Bethlems, or Bedlams, with which our immediate ancestors were familiar (see BEDLAM). But apart from such receptacles, the vast majority of the insane must have been neglected; in some countries, reverenced as specially stricken of God; in others, tolerated, or tormented, or laughed at, as simpletons or buffoons; in others, imprisoned as social pests, even executed as criminals. In a few spots which had reputation for sanctity, or where miraculous cures of nervous diseases were supposed to have been effected, such as Gheel and St. Suaire, communities were formed, of which lunatics, sent with a view to restoration, formed a large part: they resided in the houses of the peasants, and partook of their labor and enjoyments: see GHEEL. Asylums, properly so called, date from the commencement of the 19th c.: and for many years after their institution, though based on benevolent views, they resembled jails both in construction and in the mode in which they were conducted, rather than hospitals. Until very recently, a model erection of this kind was conceived necessarily to consist of a vast block of building, the centre of which was appropriated to the residence of the officers, the kitchen and its dependencies, the chapel, etc., from which there radiated long galleries, in which small rooms, or cells, were arranged on one or both sides of a corridor or balcony, having at one extremity public rooms, in which the agitated or non-industrial inmates, as the case might be, spent the day, while the more tracticable individuals were withdrawn to engage in some pursuit, either in workshops, clustered round the central house, or in the grounds attached, which were surrounded by high walls, or by a ha-ha. The population of such establishments, when they were appropriated to paupers, ranged from 100 to 1,400 patients. These were committed to a staff composed of a medical officer, matron, and attendants, to whom were directly intrusted the management, discipline, and occupation of the insane, in accordance with regulations or prescriptions issued by the physician. A gradual but great revolution has taken place in the views of psychologists as to the provisions and requirements for the insane during seclusion. The efforts of John

Conolly, the English alienist, to introduce his 'no restraint system' in 1847, were largely influential in bringing about the first changes for the better. (See CONOLLY: 'Treatment of the Insane without Mechanical Restraint,' and 'The Construction and Government of Lunatic Asylums.') As a result of this change, asylums, especially for the wealthy classes, are assimilated in their arrangements to ordinary dwelling-houses; while it is proposed to place the indigent in cottages in the immediate vicinity of an infirmary, where acute cases, individuals dangerous to themselves or others, or in any way untrustworthy, could be confined and actively treated, as their condition might require. The actual cottage system, or village plan, is the form of construction applied to insane asylums and charitable institutions, and widely employed at present, in which large and cumbersome buildings are replaced by detached cottages of varying size, from those which will house 6 to a doz. patients to such as will accommodate 20 or more. Usually they are put up in groups or along streets and avenues like a village. In the first mode, the groups are given up severally to a special industry, as a brickyard, a plot for garden truck, farming, shop industries and so forth, in each of which the patients are employed according to its appropriate need, all the groups being upon a single large estate, part of one institution and managed as such. In the second, the village plan, the state is laid off in streets and avenues, giving it the look of an ordinary village, each house having its flower garden and trees, etc. In either arrangement, an administration building is located near the centre of the whole plant, with a hospital for the sick and any in need of special care. In these central area are also the utility buildings, the bakery, the general laundry, etc. Since the cottages may be of wood or any moderate priced materials, there is hardly a comparison between the cost of this plan and that of the old fashioned costly one building asylum of extensive dimensions. It has besides the advantages of being homelike, more practicable for administration, and of permitting indefinite expansion. Alt-Scherbitz near Leipsic, Gabersee near Munich, Germany; the Craig Colony for Epileptics, and the Saint Lawrence State Hospital in N. Y. state are among the best known institutions conducted after this plan. But in all establishments, whether entitled to be regarded as upon the most modern cottage asylum plan or not, the semblance and much of the reality of coercion has been abolished; the influence of religion, occupation, education, recreation; the judicious application of moral impressions, and the dominion of rational kindness and discriminating discipline, have been superadded to mere medical treatment, and substituted for brutal force, terror, and cruelty. Dietetics form an important part of the regimen as also regular exercise; judicial direction

and control; diversion in the way of games, music, or dramatic entertainments, etc. Occupation is of paramount importance, and isolation from worry, care, noise, company, and the contact with healthy reasoning minds of nurses and doctors, together with a pleasant varying of surroundings to obviate the dangers of of morbid association of ideas induced by monotony upon weakened minds are together the main forces upon which the modern conduct of asylums depend for their good results. In many conditions, drugs are indispensable, but the use of mechanical contrivances for restraint is practically at an end in modern asylums of good standing, except in so far as confinement and regulations are restraint, or where as in certain cases, such as refusal to take food or determined attempts at suicide, some forms of mechanical restraint are found not only necessary but helpful.

Safeguards against the incarceration of sane people in institutions for the insane, as also the security to the insane a full enjoyment of their rights, are of special importance, and are provided in many countries, and in most of the states of the Union. In the state of N. Y. only after a process, which though not necessarily public, is so searching and complicated as to reduce the danger of collusion to its minimum, can a person be committed to an asylum for the insane. The licenses to physicians or to state hospitals whereby they are permitted to conduct institutions for the insane are issued or revoked by the commissioners of lunacy. The commissioners have also the responsibility of visiting all institutions, and to supervise their management. In relation to the care of the criminal insane the state of N. Y. has an honorable record, and the history of its experiments in this direction are of especial interest. The removal of the convict insane from the insane asylum proper at Utica, where they were formerly committed, did away with a most troublesome element. The first move made by the commissioners appointed by the governor to look into the subject was the appropriation of funds for the construction of a building by convict labor, upon the grounds adjoining the old Auburn prison, for the express housing of this class of the insane. It was opened as an asylum Feb. 2, 1859. This did not relieve the situation, however, with regard to insane patients charged with crime and often possessed of dangerous delusions, but who were unconvicted, and not properly of the convict class. To counteract this difficulty, in 1869 an act was passed for the relief of the state asylums, by empowering judges to commit insane persons charged with dangerous crimes, to either the asylum for insane convicts at Auburn, or to one of the state asylums. In 1884 the court was empowered to give to Auburn under several different heads of commitment practically all the insane of the state, convicted and unconvicted. When this asylum became

overcrowded and there was no land available for extension of buildings, a commission appointed in 1886 to decide upon better provisions, following recommendations by Dr. Carlos MacDonald, resulted in the purchase of 250 acres in Dutchess co. for a farm, and the erection of the building now know as the Matteawan State Hospital, opened in 1892. In its turn Matteawan's population outgrew its quarters, and in 1896 a site was selected near Clinton prison for another new hospital, which was formally established in 1899 by act of legislature as the Dannemora Hospital for Insane Convicts. The hospitals or asylums in all civilized countries are now among the very best of public institutions, and the prejudices once existing against them are no longer warranted. The indications for treatment vary according to the nature of the case. The weak and exhausted must be built up; the depressed must be encouraged and diverted; the violent and excited must be restrained; the chronic and demented must be cared for often as though they were children. The practice of today is in favor of all humane methods, such as by recreation, useful employment, amusements, and an appeal to the best remaining or active elements of the mental life. Physical restraint is reduced to a minimum, although in the most violent cases it cannot be entirely abolished. Punishment is practically abandoned. It is satisfactory to know that all our best-regulated hospitals for the insane are enabled to report annually a good percentage of recoveries, and this is in accord with the teaching and practice of modern science, which regards insanity entirely from its physical aspect as a disease of the brain. Consult: Dr. H. E. Allison, 'Care and Custody of the Convict and Criminal Insane,' in *Proceedings of National Prison Assoc.*, Wash., 1901.

LUNCH, n. *lŭnsh*, or LUNCHEON, n. *lŭnsh'ŭn* [OE. *lunche*, the sound of a blow: prov. F. *lochon*, a lump of bread taken from the loaf: *lunch* is closely related to *lump:* comp. Gael. *lonach*, hungry: W. *llwnc*, a gulp]: *literally*, a lump of something eatable; a light meal between breakfast and dinner. *Note.*—LUNCHEON may be explained from OE. *nooning*, a repast by laborers taken about *noon*, corrupted into *noonshun*, then into *nunchion* and *nuncheon*, and finally into *luncheon*. In proper usage LUNCH is the verb and LUNCHEON the noun.

LUND *lônd* (*Londinum Gothorum*): city of Gothland, in the extreme s. of Sweden, in an extensive and fertile plain 30 m. s.e. of Helsingborg. It was formerly the chief seat of the Danish power in the Scandinavian peninsula, and long the cap. of the Danish kingdom. The only notable building is the cathedral, said to be the finest church in Scandinavia: its crypt is as old as the 11th c. and is one of the largest in the world. There are manufactures of cloth, tobacco, and leather. Lund is one of the oldest towns in Scandinavia; in 920 it was taken

and plundered by a band of *Vikings;* it was the see of a bp. from the time of the introduction of Christianity, and from 1104 its abp. long exercised jurisdiction over all Denmark, Sweden, and Norway. Lund has a university, founded 1628, which has now 700 students, a library of 180,000 vols. and several thousand manuscripts, an excellent zoological museum, and a botanic garden.—Pop. (1901) 16,943.

LUNDY, *lŭn'dĭ,* BENJAMIN: abolitionist: 1789—1840, Oct. 22; b. Hardwich, N. J., of Quaker parents. After a common-school education, he was apprenticed to a saddler in Wheeling, W. Va.; settled in St. Clairsville, O.; removed to St. Louis 1819; and to Mount Pleasant, O., 1820. In Wheeling the sight of coffles of slaves passing to the southern market had roused his sympathy and indignation; and he considered his trade chiefly as a mode of getting money with which to combat slavery through the press. At Mount Pleasant he established the *Genius of Universal Emancipation,* 1821, Jan.; he soon removed it to Jonesboro, Tenn., and 1824 to Baltimore as a weekly. About four years afterward he was assaulted and nearly murdered on the street by the chief slave-dealer of the city, whose business he had denounced in the *Genius.* In 1829 William Lloyd Garrison became co-editor of the paper, but was put in prison for criminal libel in declaring the slave traffic piratical: this ended the partnership, and the paper was removed to Washington nominally, but printed monthly wherever Lundy found place for its issue on his lecturing tours. In 1836 Lundy began the *National Enquirer* in Philadelphia, and edited it a year; then removed to Lowell, Ill., where he died. Lundy had dauntless courage and unwavering self-sacrifice. On his great mission he traveled more than 25,000 m. (5,000 on foot), visited 19 states, also Canada and Hayti; everywhere lecturing and toiling to bring liberty to the oppressed. He favored gradual rather than instant emancipation, as the safest procedure.

LUNDY ISLE: island of Devonshire, England, in the mouth of the Bristol channel. It is about three m. long from n. to s., and one m. broad; 1,800 acres. Its s. point is about 12 m. from Hartland Point, on the coast of Devonshire; and its n. end about 29 m. from St. Gowan's Head, in Wales. Its shores are rocky and precipitous, and approach to them is rendered dangerous by numerous insular rocks. There is only one landing-place, which is on the s. side, and near it are dangerous reefs. Near the s. end of the island is a light-house, on a height 567 ft. above the sea. The cliffs are the resort of multitudes of solan geese. Granite is the prevailing rock. Pop. about 150.

LUNDY'S LANE, *lŭn'dĭz lān,* BATTLE OF: 1814, July 25, between the Americans and the British, in Canada, about 1½ m. from the falls of Niagara. Gen. Brown with

an American army of 3,000 men was encamped on the Chippewa, opposite Buffalo, when he heard that the British under Gen. Drummond had crossed the Niagara at Queenston to attack the American depot of supplies at Ft. Schlosser. He at once sent Col. Winfield Scott with 1,200 men to make a demonstration against Queenston. Near sunset Scott came upon a strong force of the enemy under Gen. Riall, posted on a wooded eminence at the head of Lundy's lane. Sending to Brown for reinforcements, Scott sent Maj. Jessup to attack the British left, while he assailed their front. Jessup was successful, capturing Riall and his staff; but Scott met with stubborn resistance. Meanwhile Brown came to the support of the Americans, and Drummond to that of the British. Under cover of darkness the Americans tried to take the British battery of 9 guns. At first repulsed, Scott, at the head of a second regiment, took the guns, turned them against the enemy, and so enabled the Americans to hold the position until the British withdrew at midnight, after three gallant attempts to recover it. Drummond was wounded; so were Brown and Scott. The Americans lost in killed and wounded, 743; the British, 878.

LUNE, n. *lôn* [F. *lune*, the moon—from L. *luna*, the moon: It. *luna*]: anything in the shape of a half-moon; a figure crescent-shaped; a geometrical figure bounded by the intersecting planes of two circles.

LÜNEBURG, *lü'nĕh-bûrch:* formerly a principality in Lower Saxony, now a dist. in the province of Hanover; 4,300 sq. m.—The people mostly are Protestants. The Elbe forms its n. boundary. Great part of the country is occupied by the *Lüneburg Heath.* See HANOVER.—Pop. of dist. about 450,000.

LÜ'NEBURG: town of Hanover, province of Lüneburg, on the river Ilmenau, 24 m. s.e. of Harburg by railway. It is mentioned as early as the age of Charlemagne, and was formerly an important Hanseatic town. It is surrounded with high walls and towers, and possesses many ancient buildings. The trade is considerable. Near Lüneburg is the salt-work of Sülze, opened in the 10th c., and still very productive. Near also are rich seams of lime and gypsum. At Lüneburg was the first engagement in the German war of liberation, 1813, Apr. 2. About 16 m. s.w. of the town, in the Lüneburg Heath, is the Göhrde, a beautiful forest, with a royal hunting-lodge.—Pop. of Lüneburg about 21,000.

LUNENBURG, *lô'nĕn-bĕrg:* Canada, town, seaport, capital of Lunenburg county, in the province of Nova Scotia, and about 35 m. s.w. of Halifax. The first settlement was made by Germans in 1753. It has a large, safe harbor. The chief industries are ship-building and fishing. Lunenburg has a large fishing-fleet engaged in the cod and other fisheries, and it exports considerable fish and lumber to the West Indies. Pop. (1901) 2,916.

LUNETTE, n. *lû-nĕt'* [F. *lunette;* It. *lunetta,* a little moon—from L. *luna;* F. *lune,* the moon]: anything in the shape of a small moon; an opening in a concave ceiling for the admission of light; a semicircular window, or a space above a square window, bounded by a circular roof: a watch-glass flattened. In *fortification,* a small work advanced beyond the ditch of the ravelin, to supply its deficiency of saliency, and formed at the re-entering angle made by the ravelin and bastion. The lunette has one face perpendicular to the ravelin, and the other nearly perpendicular to the bastion. See FORTIFICATION.

LUNÉVILLE, *lü-nā-vēl':* town in the dept. of Meurthe-et-Moselle, France, at the confluence of the Meurthe and the Vezouse. It is regularly built and unwalled. It was formerly a frequent residence of the dukes of Lorraine, whose palace is now used as a cavalry barrack. It is one of the largest cavalry stations in France. Lunéville has manufactures of cotton and worsted goods, embroidery, and earthenware. The town has historic celebrity from the Peace of Lunéville, concluded here 1801, Feb. 9, between Germany and France, on the basis of the Peace of Campo-Formio (q.v.).—Pop. about 22,000.

LUNG, n. *lŭng,* usually in the plu. LUNGS, *lŭngz* [Icel. *lunga;* Ger. *lunge;* Dut. *longhe,* a lung: Icel. *lungu,* lungs: Bav. *luck* or *lung,* loose]: the organs of respiration in mammals, birds, and reptiles. See RESPIRATION, ORGANS OF. LUNGED, a. *lŭngd,* having lungs. LUNG'LESS, a. *-lĕs,* without lungs.

LUNGE, v. *lŭnj* [F. *allonger,* to lengthen, to thrust]: another spelling for *longe* or *allonge;* to make a sudden pass or thrust in fencing. LUNG'ING, imp. LUNGED, pp.

LUNG'-PLAGUE OF CATTLE. See CATTLE-PLAGUE.

LUNGS, DISEASES OF THE. *Bronchitis* (*catarrhal bronchitis, tracheobronchitis*), an inflammation of the mucous membrane of the bronchial tubes; either acute or chronic. If the smaller bronchioles are affected the term *capillary bronchitis* is sometimes applied, but this term is now usually used to cover an involvement of the alveoli also, with some local consolidation, making the condition practically identical with the so-called bronchopneumonia.

In *acute bronchitis* the mucous membrane becomes reddened and swollen and many of the epithelial cells desquamate, becoming mixed with the excessive secretion of mucus, and, if the irritation be severe, with numbers of leucocytes which have migrated through the mucous membrane: thus constituting the mucous expectoration familiar in these cases. Bronchitis is caused by many varieties of irritants. Among the predisposing causes may be mentioned: both extremes of life, weakness from any cause, climatic changes, and exposure to cold. The breathing of irritating dust and chemicals frequently

brings on attacks. The irritation may extend from higher up in the nose and throat. Bronchitis frequently occurs as a part of infectious diseases such as measles, whooping cough, or influenza. The ordinary cold in the chest is simply a bronchitis. Bronchitis is a frequent predisposing cause to pneumonia and tuberculosis, but strictly speaking it never develops into them. In mild cases but little treatment is necessary. An attack may often be cut short by taking Dover's powder gr. 5, quinine gr. 5, calomel gr. 3, with a glass of hot lemonade, at bedtime, followed in the morning by half a bottle of citrate of magnesia.

Chronic bronchitis usually follows an acute attack, but may also occur as a part of other chronic diseases, as rheumatism, gout, Bright's disease, alcoholism, heart lesions, syphilis, tuberculosis, emphysema, and asthma.

The changes in the mucous membrane are similar to those in the acute form, excepting that the epithelial lining of the bronchial tubes is more thoroughly denuded and the mucous glands may atrophy. When some of the bronchial tubes become markedly dilated the term *bronchiectasis* is used. When the secretion from the tubes is unusually abundant the term *bronchorrhea* applies. When a decomposition of the mucous occurs in the dilated bronchioles, an extremely foul odor is produced, and the condition is called *fetid bronchitis. Dry catarrh* is a chronic bronchitis with practical absence of expectoration.

A change of climate to a warm, dry or sometimes moist air is always beneficial; the patient should avoid exposure to sudden changes of temperature, first attending to any associated diseases. The skin and kidneys should be kept active. Many cases will be quickly benefited by 5-grain doses of iodide of potassium three or four times a day. In other cases much benefit may follow the use of creosote combined with eucalyptus. In fetid bronchitis the following mixture inhaled, preferably from a steam atomizer, will usually give relief: Carbolic acid, 1½ gr.; oil of eucalyptus, 3 drops; oil of turpentine, 9 drops; water, 1 oz.

Bronchial stenosis is a condition of narrowing of one or more of the bronchial tubes, either by constriction or by compression. The constrictions are usually the result of scars following chronic ulceration from such diseases as syphilis or tuberculosis. Compression may occur from tumors, enlarged glands, aneurysms, inflammatory exudates, or more rarely abscess or parasites. The treatment depends upon the cause and should be conducted by a physician.

Fibrinous bronchitis (*croupous bronchitis, plastic bronchitis, or mucous bronchitis*) is an inflammation of the bronchial tubes associated with an exudate of fibrin, which forms plugs the size and shape of the tubes which may be subsequently coughed up and expectorated.

Congestion of the lungs (*hyperemia of the lungs*) is a condition in which the blood-vessels of the lungs contain an excessive amount of blood. There are two varieties, active and passive.

Active hyperemia is a condition in which more blood than normal is forced into the vessels. It may result from irritative causes, as early in pneumonia, pleurisy, or tuberculosis. It may also follow the inhalation of irritating substances or gases, or hot air, or may follow violent physical exercise, mental emotion, or the excessive use of alcohol. Shortness of breath, cough, and the expectoration of bloody froth are usually associated with this condition. The duration is usually short. It may subside completely or result fatally in a few hours, or may be followed by pneumonia within a day or two. It is best treated by hot applications, a mustard plaster, and free purgation. In severe cases blood-letting and the use of aconite or veratrum viride may save life.

Passive hyperemia results from an obstruction in some manner to the return circulation so that the blood will be dammed back into the vessels of the lung, causing an excessive accumulation there. It is most frequently produced by inefficiency of the heart valves or weakness in heart action, which may be assisted in the dependent portion of the lung by gravity, as occurs most frequently in the great debility found in the last stages of tuberculosis, typhoid fever, cancer, etc. It may also occur as a result of direct obstruction of the return vessels by pressure, as from tumors or aneurysm. The condition is characterized by shortness of breath, and the coughing up of bloody, frothy expectoration which under the microscope will show pigmented epithelial cells. The treatment depends upon the cause. The patient's position should be changed frequently to avoid the continuous action of gravity upon any one portion of the lungs. Blood-letting may be necessary, or in desperate cases the tapping of the right auricle of the heart by a surgeon may save life.

Pulmonary edema (*edema of the lungs, dropsy of the lungs.*)—The transudation of serum into the air cells and tissues surrounding them. The process is usually secondary to some other lesion.

Inflammatory edema (*collateral edema*) is usually local, involving a small portion of the lungs, surrounding an area of inflammation, as in abscess or infarction. The term *hypostatic edema* is used to indicate a transfusion of serum during hypostatic congestion. General pulmonary edema occurs when the tension in the pulmonary capillaries is much increased or from increased fluidity of the blood or increased permeability of the capillary walls. Among the chief causes of increased pressure would be a weakness of the left ventricle or obstruction of the circulation, causing a damming back of the blood in the lung. Fluidity of the blood and changes in the

vessel walls are associated with severe anemia, nephritis, infectious fevers, and injuries to the brain. Shortness of breath is marked; cough, with abundant expectoration expelled with difficulty, is present; fever is usually absent; the pulse is weak and rapid, and cyanosis makes its appearance. The position of the patient should be frequently changed, dry cups placed over chest, and the causative factor ascertained and relieved. Venesection may be required in desperate cases.

Hemoptysis (*pulmonary hemorrhage, bronchopulmonary hemorrhage*) is the expectoration of blood from the air passages; when it is from the larger bronchial tubes the term *bronchorrhagia* is used. Any violent congestion of the lungs may result in the rupture of capillaries, with the escape of some blood, as in pneumonia, bronchitis, cancer. Injuries, excessive exertion, and violent irritants may likewise be causes. Ulceration, as in tuberculosis, is the most frequent cause. Gangrene, abscess, and parasitic diseases are sometimes associated with hemorrhage. The congestion in advanced heart diseases or aneurysm may rupture a blood-vessel. Certain diseases, as yellow fever, scurvy, gout, hemophilia, and purpura hemorrhagica, may all be responsible for bleeding from the lining of the bronchial tubes. Vicarious hemoptysis is a hemorrhage from the respiratory mucous membrane occurring instead of or at the time of menstruation.

The treatment depends upon the cause. The patient should be kept absolutely quiet, and no stimulants which would tend to raise arterial pressure should be given unless demanded by the especial causative factor. An ice bag should be placed over the chest and a hypodermic injection of morphine and atropine administered. Ergot and the astringents internally are worthless in pulmonary hemorrhage.

Pneumorrhagia (*pulmonary apoplexy*) is a hemorrhage into the air cells and substance of the lung. It may be diffuse or circumscribed. It occurs usually from penetrating wounds or rupture of a thoracic aneurysm, but may be caused by pyemia.

Pulmonary embolism (*hemorrhagic infarction, embolism of the lung*) is a blocking of the branch of the pulmonary artery by a foreign body floating in the blood stream which follows the course of the vessel until the vessel's caliber becomes too small to permit its passage. This foreign body is most apt to be a mass of fibrin from a thrombus or from the heart. As the lung has practically no collateral circulation, the obstruction of a branch of a pulmonary artery would cut off the nutrition to a wedge-shaped area whose apex would be at the point of obstruction, and base at the surface of the lung. The seriousness of the condition depends upon the size of the vessel occluded and its subsequent course. A small infarction may become healed and calcify. Abscess or

gangrene of the lung follows in many cases. In occlusion of larger vessels death may follow rapidly.

Chronic interstitial pneumonia (*cirrhosis of the lung, fibroid induration of the lung*) is a condition in which an excessive amount of newly formed fibrous tissue is produced in the walls of the alveoli. It may be localized or diffuse. The condition is chronic and follows prolonged inflammation, as in tuberculosis. Lobar pneumonia with delayed resolution frequently results in induration. It may also follow syphilis or parasitic diseases of the lung. The disease is permanent and the most that treatment can do is to render the work of the lung easier. The condition may last for many years, but will ultimately shorten life more or less.

Pulmonary actelectasis (*compression of the lung, collapse of the lung*) is a condition produced by absorption of the air from an air-cell and a collapse of that portion of the lung. It may affect an entire lung, as in newborn children whose lungs have never been inflated, or circumscribed areas by the plugging of small bronchial tubes. The lung may be compressed by effusions into the pleural or pericardial cavity, by tumor or aneurysm, or by deformities of the thorax, especially spinal curvatures. The collapsed portions of the lungs are bluish red in color, do not crepitate on pressure, and because of the absence of air will sink in water.

Pulmonary emphysema may be of two varieties, interlobular and vesicular. In interlobular emphysema air from the lungs enters the interlobular connective tissues, usually following wounds (stabs or fractured ribs) or violent coughing. Vesicular emphysema (*alveolar ectasis*) is a dilatation of the terminal air spaces. A loss of elasticity and a production of some fibrous tissue in the alveolar walls precede the condition, so that when the air spaces become distended they remain so. This produces a thinning of the walls, narrowing of the blood-vessels, and impairment of nutrition, which results in a breaking down of these walls in many places, producing numerous abnormal communications between the air spaces if the condition persist. Compensating emphysema occurs when one portion of the lung attempts to carry on more than its quota of work on account of inefficiency of other portions of the lung. Hypertrophic emphysema is said to exist when the lung is materially enlarged by the process. Emphysema is a secondary condition and may follow whooping cough, chronic bronchitis, asthma, severe muscular exertion, glass-blowing, diving, or blowing wind instruments. Malnutrition, advanced years, and unhygienic surroundings are contributing factors. Atropic emphysema is a condition in which the lungs are decreased in volume. This usually occurs in old age, when the term senile emphysema is used. The condition is permanent and the treatment only palliative.

Gangrene of the lung is a condition in which the lung

tissue dies and undergoes putrefaction. The process may be circumscribed or diffuse. The lung substance affected becomes dark greenish brown in color and soon softens and liquefies, producing a cavity with rough edges containing a dark, foul-smelling fluid, in which is mucus, blood, shreds of lung tissue, and myriads of the bacteria which are causing the putrefaction. This fluid is abundantly expectorated and when allowed to stand in a conical glass will separate into three layers, the upper one frothy and greyish yellow, the middle one clear, and the lowest composed of a greenish sediment containing shreds of lung tissue and blood. If a large blood-vessel be eroded, hemorrhage will occur which may be fatal. Pulmonary gangrene may follow pneumonia, traumatism, the lodgment of foreign bodies in the lung, or shutting off of nutrition by pressure, as by a tumor or aneurysm. It may follow an abscess or the lodgment of bacteria in the lungs from other sources, especially abscess of the brain. Debilitated condition, or more frequently diabetes, may be the causative factors.

The treatment depends upon the administration of creosote internally and the use of sprays of creosote, iodine, and carbolic acid with an atomizer. Tonics and free stimulation are necessary adjuncts. Death usually occurs, but recovery may follow, especially with the intervention of the modern surgical methods of opening and draining the lung.

Abscess of the lung (*suppurative pneumonitis*) is an abscess formation which may involve any portion of the lung, from the wall of a bronchial tube to an entire lobe or more. It may occur in tuberculosis, pleurisy, or pneumonia, or may follow a perforating wound of the lung. It also occurs in pyemia or may be metastatic from abscess in other parts of the body. Some cases result from the inhalation of foreign bodies. If the abscess be small and discharge into a bronchial tube, recovery frequently occurs. If the abscess rupture into the pleural or pericardial cavity, surgical intervention is required. In case a large area of the lung is involved death usually follows. The treatment is supportive and should be supplemented with inhalations of antiseptics. In many cases the treatment will be surgical.

Pneumonoconiosis (*anthracosis, chalicosis, siderosis*) is a condition in which there is an extensive production of fibrous tissue throughout the lung substance as a result of the prolonged inhalation of irritating dust. This condition occurs most frequently in coal miners (*anthracosis*), stone cutters, knife grinders (*chalicosis*), workers in metallic dust (*siderosis*). It is a very chronic condition and is accompanied by bronchitis. It is a strong predisposing cause to tuberculosis and other diseases of the lungs. It is permanent, but amelioration of the symptoms will follow a change of occupation and life out of doors, providing the process has not gone too far.

Cancer of the lung (*pulmonary carcinoma*) may originate in the lung, but is usually secondary to cancers elsewhere, the cancer reaching the lung by direct extension from neighboring structures, and as the esophagus or pleura, or the cancer cells may be carried a greater distance, as from the breast, stomach, or abdominal organs. Sarcoma of the lungs is a malignant tumor differing from cancer in the nature of the cells composing the growth, which in this case are of embryonic origin. They may originate primarily in the lungs, or the cells from which they originated may have been carried from similar tumors in other portions of the body by direct communication, or through the blood-vessels and lymphatics. The cases are almost invariably fatal, although some promise of palliation at least seems to be offered by the use of the *x*-ray. The injection of Coley's mixture of erysipelas and prodigiosus toxins has seemed to benefit a few cases. Otherwise the treatment seeks simply to relieve pain and defer the fatal issue.

Parasitic diseases of the lung.—A number of animal parasites may gain an entrance to the lung and give rise to more or less severe symptoms. Hydatid cysts, produced by echinococcus (a stage of development of tapeworm) may develop, usually secondarily, from the liver. Strongylus and flukes (*Paragonimus Westermanii*) have also been found in the lung, the latter occurring principally in the Philippines and other tropical countries, producing the so-called *endemic hemoptysis.*

Asthma. See ASTHMA.

See also RESPIRATION; PNEUMONIA; PLEURITIS; BRONCHITIS; TUBERCULOSIS.

LUNGWORT, *lŭng'wėrt*, or OAK-LUNGS (*Sticta pulmonaria*): a lichen with a foliaceous leathery spreading thallus of olive-green color, pale brown when dry, pitted with numerous little cavities and netted, much lacerated; the shields (*apothecia*) marginal, reddish brown with a thick border. It grows on trunks of trees in mountainous regions, in Britain and other European countries, sometimes almost entirely covering them with its shaggy thallus. It has been used as a remedy for pulmonary diseases. It is nutritious, and, when properly prepared, affords a light diet, capable of being used as a substitute for Iceland Moss; yet it is bitter enough to be used as a substitute for hops. It yields a good brown dye.—The name *Lungwort* is also given to a genus of phanerogamous plants (*Pulmonaria*), of nat. ord. *Borragineæ.* The common lungwort (*P. officinalis*) is frequent in parts of Europe. It has ovate leaves and purple flowers, and was formerly employed in diseases of the lungs, but seems to have been recommended chiefly by a fancied resemblance to the lungs in its spotted leaves. It is mucilaginous, and slightly emollient. It contains nitre in considerable abundance. It is used in n. Europe as a pot-herb.

LUNIFORM, a. *lô'nĭ-fawrm* [L. *luna,* the moon; *forma,* shape]: moon-shaped.

LUNISOLAR, a. *lô'nĭ-sō'lâr* [L. *luna,* the moon; *sol,* the sun]: resulting from the united revolutions of the sun and moon. LUNISOLAR YEAR, a period or cycle, consisting of 532 common years, at whose end the eclipses return again in the same order.

LUNT, n. *lŭnt* [Dan. and Ger. *lunte,* a match]: a quick-match for firing cannon.

LUNT, GEORGE: American journalist and poet: b. Newburyport, Mass., 1803, Dec. 31; b. Boston, Mass., 1885, May 17. He was graduated from Harvard in 1824, studied law and was admitted to the Essex bar in 1827. He sat in the state legislature, was appointed United States district attorney by President Tyler and during the civil war was associate editor with George S. Hillard of the Boston *Courier.* He published *Poems* (1839); *The Age of Gold* (1843); *The Dove and the Eagle* (1851); *Lyric Poems* (1854); *The Union, a poem* (1860); *Origin of the Late War* (1866); *Old New England Traits* (1873).

LUNULA, n. *lô'nū-lă* [L. *lunŭla,* a little moon—from *luna,* the moon: It. *lunula:* F. *lunule*]: a little moon; the crescentic portion of the human nail, near the root, which is whiter than the rest; one of the thinner portions of the arterial valves of the heart. LU'NULAR, a. *-lėr,* shaped like a small crescent. LU'NULATED, a. *-lā-tĕd,* resembling a small crescent. LUNULE, n. *lô'nūl,* a crescent-like mark.

LUPERCAL, a. *lô'pėr-kăl* or *lô-pėr'kăl:* pertaining to the LU'PERCA'LIA, n. plu. *-kā'lĭ-ă,* or feasts of the anc. Romans in honor of an old Italian deity: N. the feast itself.—*The Lupercalia* was a festival among the ancient Romans, held Feb. 15, in honor of Inuus, an old deity of s. Etruria. Much obscurity involves the subject. When Rome began to seek a Grecian origin for its religious ceremonies, it is said that this god was identified with Lycæan Pan, and his worship was introduced by Evander, the Arcadian. Modern scholars place no value on such statements; though they also differ among themselves. The god (who has often been called Lupercus) is believed by some to have been one of the oldest pastoral deities of Italy; and certainly his rites were of the rudest and most primitive character, and indicate a high antiquity. In early times his name was kept a strict secret. Goats and dogs were sacrificed; afterward, the priests (called *Luperci*) cut up the skins of the victims, and twisted them into thongs, with which they ran round the line of walls of the old Palatine city striking every one who came in their way (which women used to do) in hopes that the god of fertility would be propitious toward them. This running about with thongs is understood to have been intended as a symbolical purification of the land. The thongs were called *Februa,* the festival

Februatio; hence the month of February has its name, the last month in the old Roman year. The place where the festival was held was called the Lupercal, and was a cave on the w. side of the Palatine Hill. It contained a bronze image of the she-wolf that suckled Romulus: this was placed in it B.C. 296. Lupercalia was held also in other cities of Italy.

LUPIN, or LUPINE, n. *lô'pĭn* [F. *lupin*—from L. *lupīnus*, a kind of pulse: It. *lupino*], (*Lupinus*): genus of plants of nat. ord. *Leguminosæ*, sub-ord. *Papilionaceæ*, mostly annuals, but some of them perennial herbaceous plants, some half-shrubby; and generally having digitate leaves, with rather long stalks. The flowers are in racemes or spikes, the calyx two-lipped, the keel beaked, the filaments all united at the base. The species of lupin are numerous and natives chiefly of the countries near the Mediterranean, and of the temperate parts of N. and S. American. The WHITE LUPIN (*L. albus*), a species with white flowers, has been cultivated from time immemorial in s. Europe and parts of Asia, for the seeds, which are farinaceous, and are used as food, though, when raw, they have a strong, disagreeable, bitter taste, which is removed by steeping in water and boiling. They were a favorite kind of pulse among the ancient Greeks and Romans, and still are so in parts of s. Europe, though generally disliked by those unaccustomed to them. They are used in many countries for feeding cattle, particularly draught-oxen.—The YELLOW LUPIN (*L. luteus*), so called from its yellow flowers, and the EGYPTIAN WHITE LUPIN (*L. termis*), which has white flowers tipped with blue, also are cultivated in s. Europe, Egypt, etc., for their seeds, similar in their qualities to those of the white lupin.—In many countries, lupins, particularly the white lupin, are cultivated to yield green food for cattle, and to be plowed down for manure. They grow well on poor and dry sandy soils, which by this process of *green-manuring* are fitted for other crops. Many species of lupin are cultivated in flower-gardens, having beautiful white, yellow, pink, or blue flowers. The flowers of some species are fragrant. *L. perennis* adorns sandy places from Canada to Florida with its fine blue flowers.

LUPULIN, or LUPULINE, n. *lô'pū-lĭn* [L. *lupŭlus*, the hop—dim. of L. *lupus*, the hop-plant]: the bitter aromatic principle of hops. See HOPS.

LUPUS, n. *lô'pŭs* [L. *lupus*, a wolf]: chronic disease of the skin, in which dull or livid tubercles are developed, which have a tendency to destroy or seriously to affect the adjacent tissues, with or without ulceration, and commonly ending in indelible cicatrices: named 'wolf' from its destructive nature. It was formerly known as *noli me tangere*. The disease usually attacks the face, especially the alæ of the nose and the lips, but is sometimes met elsewhere. It is known technically as

L. vulgaris to distinguish it from another skin disease called *L. erythematosus.*

L. vulgaris commences usually with the appearance of one or two circular or oval, dull-red, somewhat translucent tubercles, about two lines in diameter. After a time, these tubercles increase in number and size, and take on new characters. They may ulcerate, in which case the ulceration may pursue a superficial or a deep course. Scabs are formed over the ulcers; and as these scabs are thrown off, the ulcer beneath is found to have increased in extent, till great destruction of the soft parts (and in the case of the nose, the cartilages) is effected. The ulcer of lupus has thick red edges, and exudes a fetid, ichorous matter in considerable quantity. When they do not ulcerate, the tubercles are softer than in the previous variety, and form patches of considerable extent, the intervening skin and cellular tissue also swelling and exhibiting here and there dull-red points, summits of the imbedded tubercles. The lips become much enlarged, the nostrils closed with the swelling, the eyelids everted, and the whole face hideous. Even when ulceration does not occur, the tubercles gradually become absorbed, giving place to scar tissue. The progress of lupus is usually slow, and the sufferings of the patient less than might be expected, in consequence of the sensibility of the parts being diminished from the first. The disease may continue for years, or even for life, but is seldom fatal.

The affection is a tuberculosis of the skin, and the general treatment, in the way of nourishing food and fresh air, should be the same as in the case of pulmonary tuberculosis. There are various forms of local treatment: the Finsen light, *x*-rays, excision (if the drain is of slight extent), scarifications, scraping, and cauterization.

L. erythematosus appears as an eruption of several red patches, the size of a pinhead to that of a bean, which gradually extend in area and become scaly. After a while the part first attacked becomes whitish, resembling a scar. The disease attacks the face usually and often forms a patch on each cheek, coalescing over the nose, which from its shape is known as the 'butterfly lesion.' The disease is much more rare than the other kind of lupus. The treatment requires a long time, but is usually satisfactory in the end. It should, of course, be entrusted only to the physician.

LURAY, *lū-rā':* Va., town, county-seat of Page county; on the Norfolk & Western railroad; about 100 miles north by west of Richmond and the same distance west by south of Washington. It is situated in a beautiful valley almost surrounded by mountains; nearby are a number of mineral springs. A spring which flows through the town furnishes water-power. It manufactures flour, lumber, wagons, carriages, and some agricultural implements and wooden ware. It has a distillery and a large

tannery. The Luray College for Young Ladies is located here. Pop. 1,150.

LURAY CAVE, *lū-rā':* extensive and remarkable cavern in Page co., Va., near the Shenandoah valley railroad; 1 m. from the village of Luray, 89 m. from Hagerstown, 136 m. from Richmond; in Cave Hill, Fort Mountain, Massanutton range. It was discovered 1878, Aug. 13, by Andrew J. Campbell, in an accidental manner, while taking photographic views of the picturesque region; was opened to the public the following summer; and has since became a noted resort for tourists and scientists. The cave, or rather series of caverns, not yet wholly explored, occupies an area of about 100 acres so far as known; and while inferior in extent to the Mammoth Cave (q.v.), surpasses it in the number, richness, and weird beauty of its chambers. The display of stalactites and stalagmites under the witchery of the electric light exceeds in grandeur that of any other known cave. The temperature is about the same as in the Mammoth Cave, 54° F.; the water, which fills many basins, but does not form running streams nor contain fish or other life, is clear, cold, and pure; and the air is refreshing, without depressing consequences. The entrance is a large compartment, supported by fluted columns, adorned with massive drapery in stone and glittering stalactites, and from it avenues radiate to the furthest discovered chambers, each of which is named from some striking resemblance to well-known objects. Thus there are the Crystal Lake; the Cathedral, with its immense organ; the Bridal Chamber; the Giants' Hall, with rows of mighty columns; the Elfin Ramble, a wide plateau; Pluto's Chasm; Hovey's Hall, with grotesque statuary; Hades, a dark, unfathomed abyss; the Ball-room, with gorgeous furnishings; the Vegetable Garden; the Theatre; the Fish Market, etc. Individual wonders are the Saracen Tent; Empress Column; Fallen Column; Wet Blanket; Dragon of Luray; Muddy Lake; Broddus's Lake; the Gallery; Titania's Veil; Diana's Bath; Tara's Harp; and a petrified human skeleton, partially embedded in the rock.

LURCH, n. *lėrch* [It. *lurcio;* OF. *lourche;* Ger. *lurtsch,* a game at tables]: a term used when one party gains every point before the other makes one—he is then said to be left *in the lurch;* a forlorn or difficult position. To LEAVE IN THE LURCH, a metaphor from the gaming-table; to leave in a difficult situation, or in a state of embarrassment.

LURCH, v. *lėrch* [Norw. *lurka,* to lie in wait: Dan. *lirke,* to handle gently with a thievish intent: Ger. *lauschen,* to listen; *lauscher,* an eavesdropper: another and weakened spelling of LURK]: to take away privily; to pilfer; to withdraw to one side; to lie in ambush; to lurk; to dodge; to play tricks; to defeat; to evade; to roll or pass suddenly to one side, as a ship in a heavy sea: N.

the sudden roll or shifting of a vessel to one side in a heavy sea. LURCH'ING, imp. rolling or shifting suddenly to one side; lying in wait. LURCHED, pp. *lercht,* rolled or shifted suddenly to one side, as a ship at sea. LURCHER, n. *lėrch'ėr,* one who lurks or lies in wait; one who watches to pilfer; a poacher; a dog that lurks or lies in wait for game.

LURCH, v. *lėrch* [mid. L. *lurchārĕ* or *lurcārĕ,* to devour greedily: connected perhaps with *lura,* the mouth of a bag]: in *OE.,* to swallow greedily; to devour; to disappoint. LURCH'ING, imp. LURCHED, pp. *lėrcht. Note.*—Perhaps connected with LURCH 2.

LURCH'ER: kind of dog, somewhat resembling a greyhound, and supposed to derive its origin from some of the old rough-haired races of greyhound crossed with the shepherd's dog. It is lower, stouter, and less elegant than the greyhound, almost rivals it in fleetness, and much excels it in scent. It is covered with rough, wiry hair, is usually of sandy red color, though sometimes black or gray, and has half-erect ears and a pendant tail. It is the British poacher's favorite dog, possessing all the qualities requisite for his purposes, in sagacity rivaling the most admired dogs, and learning to act on the least hint or sign from its master. It is detested by gamekeepers.

LURE, n. *lôr* [Ger. *luder,* a carcass, a bait for wild animals: It. *ludro;* F. *leurre,* a falconer's bait or lure]: *originally,* something held out to call in a hawk; anything which attracts by the hope of advantage or pleasure; an enticement: V. to attract by anything which promises advantage or pleasure; to entice or attract, as by a bait. LUR'ING, imp. enticing. LURED, pp. *lôrd,* attracted by the prospect of advantage or pleasure. *Note.*—Gael. *lur,* delight, pleasure, is suggested as an etymon for *lure:* Gael. *lurach,* comely; *lurag,* a pretty girl.

LURID, a. *lôr'ĭd* [L. *lurĭdus,* pale, yellow, wan: It. *lurido*]: gloomy; dismal; having the colors of a tempestuous sky; in *bot.,* of a dingy brown.

LURIS, *lô'rēz:* a people of Persia after whom the mountainous region in Western Persia bordering on Turkey—known as the Luristan—has been named. They are divided into the 'Little Luris' (or Feili) in the western section and the 'Great Luris' (or Bakhtyari) in the eastern; they are members of the same Iranian family to which the rest of the Persians belong, though some authorities consider that they represent a pure racial type. The Luris are more courageous, honorable, and independent than many of the other Persian races and their reputation is greatly superior to that of the Kurds. Consult: Houssaye *Les races humaines de la Perse* (Lyon, 1888); Dieulafoy, *La Perse, la chaldée et la Susiane* (Paris, 1887); De Morgan, *Mission scientifique en Perse* (Paris 1894-97); Layard, *Early Adventures in Persia, Susiana, and Babylonia* (London 1887.)

LURK, v. *lėrk* [Norw. *lurka* or *luska;* Dan. *luske*, to lurk, to skulk: see LURCH 2, of which *lurk* seems to be a variant]: to lie hid or concealed; to lie in wait; to keep out of public view. LURK'ING, imp.: ADJ. lying concealed. LURKED, pp. *lėrkt.* LURKER, n. *lėrk'ėr*, one who lurks. LURKING-PLACE, a secret place; a hiding-place.

LUR'LEI, or LORE'LEI: steep rock on the right bank of the Rhine, about 430 ft. high, a little way above St. Goar, celebrated for its echo, which is said to repeat sounds 15 times. Near it is a whirlpool, and still nearer, a rapid, called *the Bank*, formed by the river rushing over a number of sunken rocks—visible, however, at low water. In consequence, the navigation of the Rhine by rafts and boats is rather dangerous at this point, which circumstance, in connection with the *echo*, has undoubtedly given rise to the legend of the beautiful but cruel siren who dwelt in a cave of the L., and allured the passing voyagers to approach by the magic melody of her song, until she wrecked and sank them in the whirlpool. The legend has been a great favorite with the German poets, but none has treated it so exquisitely as Heine.

LUSATIA, *lū-sā'shĭ-a* (*Lausitz*): region in Germany, now belonging in part to Saxony and in part to Prussia. It was formerly divided into Upper and Lower L., which constituted two independent margraviates, including about 4,400 sq. m., with pop. about half a million; bounded s. by Bohemia, w. by Misnia and the Electorate of Saxony, n. by Brandenburg, and e. by Silesia. In 1319, L. was given to Bohemia, but was obtained by Matthias Corvinus 1478, and was finally transferred to Saxony 1635; but, by the Congress of Vienna, Lower L. and half of Upper L. was ceded to Prussia. The portion left to Saxony now forms the circle of Bautzen.

LUSCIOUS, a. *lŭsh'ŭs* [probably a mere corruption of *delicious:* Swiss, *fluss*, abundance: Gael. *lus*, a juicy plant: It. *lussare*, to wallow in worldly pleasure]: very sweet; grateful to the taste; sweet to excess. LUS'CIOUSLY, ad. *-lĭ.* LUS'CIOUSNESS, n. *-nĕs*, state or quality of being luscious; immoderately sweet.

LUSH, a. *lŭsh* [Swiss, *fluss*, abundance; Gael. *lus*, a juicy plant (see LUSCIOUS)]: in *OE.*, having a dark, deep color; not of a pale and faint color; juicy: N. in *slang*, an intoxicating liquor. LUSHY, a. *lŭsh'ĭ*, intoxicated.

LUSIAD, n. *lô'zĭ-ăd* [*Lusitānĭă*, Latin name for Portugal]: the great Portuguese epic poem of Camoëns on the discovery of India by Vasquez da Gama.

LUSITA'NIA: see PORTUGAL—*History.*

LUSITANIAN, a. *lô-sĭ-tā'nĭ-an* [L. *Lusitania*, what now is Portugal]: of or belonging to Portugal. LUSITA'NIAN-PROVINCE, n. in *zool. and geog.*, a marine province comprehending the shores of the Bay of Biscay, the Mediterranean, and n.w. Africa as far as Cape Juby.

LUSITA′NIAN RE′GION, n. in *zool and geol.*, name given by Prof. Edward Forbes to a region extending from the countries bordering the Mediterranean, through Hungary and the Crimea, to the Caucasus. *Note.*—The name 'province' is given by zoologists to a division of water; 'region' and 'sub-region' to divisions of land.

LUSK, n. *lŭsk* [Ger. *lauschen*, to listen, to lie in wait: Dan. *luske*, to skulk about: Icel. *löskr*, a lazy fellow: comp. Gael. *leasg*, lazy, idle]: in *OE.*, a slothful, lazy fellow; a sluggard: ADJ. lazy: V. to doze about idly; to be lazy and sluggish. LUSK′ING, imp. LUSKED, pp. *lŭskt.* LUSKISH, a. *lŭsk′ĭsh*, somewhat inclined to lazy habits. LUSK′ISHNESS, n. disposition to lazy habits.

LUST, n. *lŭst* [Goth. *lustus*, will, desire: AS. *lystan*, to covet, to desire: Icel. *lyst*, pleasure, desire: Low Ger. *lusten*, to desire]: longing desire; violent or irregular desire to possess or enjoy; carnal appetite: V. to desire eagerly or to long after; to have a violent longing desire after carnal pleasure; to have any depraved or irregular desires. LUST′ING, imp.: ADJ. having eager desire after: N. any depraved or irregular desire; a violent desire for carnal gratification. LUST′ED, pp. LUSTFUL, a. *lŭst′fûl*, having eager desire for carnal gratification; sensual. LUST′FULLY, ad. *-lĭ.* LUST′FULNESS, n. *-nĕs*, state of being lustful; libidinousness.—SYN. of 'lustful': licentious; libidinous; lecherous; fleshly; carnal; inordinate; impure; unchaste; lewd.

LUSTERING, n. *lŭs′tẽr-ĭng:* the brightening of metal in the crucible at the moment of reaching its point of purity, as in the cupellation of silver, when the last traces of lead pass off; brightening; lightening; a polish, as black lustre for stoves.

LUSTILY, LUSTINESS: see under LUSTY.

LUSTRAL, a. *lŭs′trăl* [F. *lustral*—from L. *lustrālis*, relating to purification—from *lustro*, I purify: It. *lustrale*]: pertaining to or used in purification. LUSTRALIA, n. plu. *lŭs-trā′lĭ-ă*, the purifying sacrifices or feasts of the anc. Romans, held every fifth year. LUSTRATE, v. *lŭs′trāt* [L. *lustrātus*, purified]: to cleanse or purify. LUS′TRATING, imp. LUS′TRATED, pp. LUSTRA′TION, n. *-trā′shŭn* [F.—L.]: the act of cleansing or purifying by water, also by fire, sulphur, or air; the application of which substances was in ancient times accompanied usually with an animal sacrifice, and with marchings round. Cities, after any great calamity, underwent lustration; fields, after sowing and before reaping; flocks, to ward off disease; armies, before a battle; children, a few days after birth. At the root of all these ceremonies was a rude acknowledgment of the fact that man is guilty of sin and needs some expiation and purification in the sight of God.—See LUSTRUM.

LUSTRE, n. *lŭs′ter* [F. *lustre;* It. *lustro;* Dut. *luister*, lustre, splendor—from L. *lustrātus*, made bright or clear: F. *lustrer*, to give gloss to—from L. *lustrārĕ*, to purify]:

brightness; splendor; fame; renown; a candlestick or gas pendant, ornamented with drops, etc.; in *min.*, a term intended to describe the intensity and quality of the light reflected from the newly fractured surfaces of rocks and minerals, as a mineral of a splendent, shining, metallic, vitreous, or pearly lustre. LUS'TRELESS, a. *-lĕs*, destitute of lustre. LUSTROUS, a. *lŭs'trŭs*, bright; shining; luminous. LUS'TROUSLY, ad. *-lĭ*.

LUSTRE: for LUSTRUM, which see.

LUSTRING, n. *lŭs'trĭng* [F. *lustrine*, lustring—from *lustrer*, to give a gloss to (see LUSTRE 1)]: a stout glossy kind of silk cloth.

LUSTRUM, n. *lŭs'trŭm*, or LUSTRE, n. *lŭs'tĕr* [L]: in *anc. Rome*, solemn offering made for expiation and purification by one of the censors in name of the Roman people at the conclusion of the Census (q.v.). The animals offered in sacrifice were a boar (*sus*), sheep (*oris*), and bull (*taurus*), whence the offering was called *Suovetaurilia*. They were led round the assembled people on the Campus Martius before being sacrificed. The L. was instituted by Servius Tullius B.C. 566; performed last under Vespasian. As the census was quinquennial, the word *lustrum* came to mean a period of five years. See LUSTRAL: LUSTRATION.

LUSTY, a. *lŭs'tĭ* [Dan. *lystig;* Ger. *lustig*, merry, jovial: It. *lesto*, agile: comp. Gael. *luthas*, vigor, pith]: full of strength and pith; stout; vigorous; healthful; able of body; in *OE.*, handsome; delightful; saucy; sturdy. LUS'TILY, ad. *-tĭ-lĭ*. LUS'TINESS, n. *-nĕs*, vigor of body; stoutness; robustness. LUS'TIHEAD, n., or LUS'TIHED, n. *-hĕd* [*lusty*, and *head*]: in *OE.*, vigor of body; also LUS'TIHOOD, n. *-hûd*. LUSTILESS, a. *lŭs'tĭ-lĕs*, weak; languid; lifeless.—SYN. of 'lusty': strong; bulky; large; corpulent; robust; fat; brawny.

LUSUS NATURÆ, *lô'sŭs nă-tū'rē* [L. *lūsus*, a sport; *natūræ*, of nature]: a freak of nature, as a sheep with six legs or two heads; anything unnatural in an animal, or in a vegetable production; a monstrosity.

LUTARIOUS, a. *lô-tā'rĭ-ŭs* [L. *lutārĭŭs*—from *lutum*, mud]: pertaining to or resembling mud.

LUTE, n. *lôt* [F. *luth*, a lute—from It. *liuto:* Ar. *al ûd*, a lute or harp: comp. Ger. *laut*, sound]: obsolete stringed musical instrument, superseded by the harp and guitar. It consisted of a table of fir; a body or belly, composed of 9 (sometimes 10) convex ribs of fir or cedar; a neck, or finger-board, of hard wood, on which were 9 (or 10) frets, stops, or divisions, marked with catgut strings; a head, or cross, on which were placed the pegs or screws that tightened or relaxed the strings in tuning; and a bridge, to which the strings were attached at one end, the other end being fastened to a piece of ivory, between the head and neck. The number of strings, originally 6, of which 5 were doubled, so as to make 11, was grad-

nally increased till they numbered 24. The performer used his left hand to press the stops, and struck the strings with his right. A peculiar description of notation, called *tablature*, was employed in music written for the lute. The strings were represented by parallel lines, on which were placed letters of the alphabet, referring to the frets: thus, A marked that the string was to be struck open (or without pressing any of the stops); B, that the first stop was to be pressed; C, the second, and so on: while over the letters were placed hooked marks, corresponding to the minim, crotchet, quaver, etc., to indicate time. So carelessly and inaccurately was lute-music generally written, that it is no easy matter to render it into the ordinary notation. The lute was formerly in high favor all over Europe as a chamber-instrument; and it was used in dramatic music to accompany the recitative. In the time of Handel, there was a lute in the Italian Opera in London; and there was a lutanist in the King's Chapel till the middle of last century.—For a minute account of the lute, and how to play it, see Mace's *Musick's Monument* (Lond. 1676). LUT'ANIST, n. player on the lute.

LUTE, n. *lôt*, or LUTING, n. *lô'tĭng* [OF. *lut*, clay mold—from L. *lutum*, mud—from *lŭĕrĕ*, to wash—*lit.*, that which is washed over with water]: substance employed for effectually closing the joints of apparatus, to prevent the escape of vapor or gases, or for coating glass vessels so as to render them more capable of sustaining a high temperature, or for repairing fractures; also a coating of clay or sand applied by chemists to strengthen their retorts. For ordinary purposes, lutes made of common plastic clay or pipeclay with admixture of linseed-meal or almond-powder, or for common stills, linseed-meal and water made into a paste, are sufficient; for more delicate experiments, *Fat Lute* (q.v.), covered over with moistened bladder, is used. Lutes for coating glass vessels are generally composed of Stourbridge clay or Windsor loam, mixed with water; but the most simple method is to brush the glass retort over with a paste of pipeclay and water, dry it quickly, and repeat the operation till a sufficient thickness of coating is obtained. Other lutes in frequent use are *Willis's lute* (a paste composed of a solution of borax in boiling water, with slaked lime), various mixtures of borax and clay, of lime and white of egg, *iron cement* (see CEMENT), moistened bladder, paper prepared with wax and turpentine, and caoutchouc. The use of the last-named lute has become extensive on account of its flexibility, and consequent non-liability to accident. LUTE, v. to coat with lute. LU'TING, imp. LU'TED, pp. LUTATION, n. *lô-tā'shŭn*, the act or method of applying lute.

LUTESTRING, n. *lôt'strĭng* [It. *lustrino* (see LUSTRE and LUSTRING)]: kind of stout shining silk; lustring.

LUTETIA, n. *lô-tē'shĭ-a:* the Latin name of Paris.

LUTETIA: see PLANETOIDS.

LUTHER, *lū'thĕr*, Ger. *lō'tĕr*, MARTIN: greatest of the Prot. reformers of the 16th c.: 1483, Nov. 10—1546, Feb. 18; b. Eisleben, co. of Mansfeld, Thuringia; son of Hans L., a peasant slate-cutter. His mother, as Melanchthon records, was a woman of exemplary virtue (*exemplar virtutum*), and peculiarly esteemed in her humble life. Shortly after Martin's birth, his parents removed to Mansfeld, where their circumstances improved by industry and perseverance. Their son was sent to school; and both at home and in school, his training was severe and hardening. His father sometimes whipped him, he says, 'for a mere trifle till the blood came,' and he was subjected to the scholastic rod 15 times in one day! Scholastic and parental severity was the rule in those days; but whatever may have been the character of L.'s schoolmaster at Mansfeld, there is no reason to believe that his father was a man of exceptionally stern character. While he whipped his son soundly, he also tenderly cared for him, and was in the habit of carrying him to and from school in his arms with gentle solicitude. L.'s schooling was completed at Magdeburg and Eisenach, and at the latter place he attracted the notice of a good lady of the name of Cotta, who provided him with a comfortable home during his stay there.

When he had reached his 18th year, he entered the Univ. of Erfurt, with the view of qualifying himself for the legal profession. He went through the usual studies in the classics and the schoolmen, and took his degree of Doctor of Philosophy, or Master of Arts, 1505, at the age of 21. Previous to this, a profound change of feeling had begun in him. Chancing one day to examine the Vulgate in the Univ. Library, he saw with astonishment that there were more gospels and epistles than in the lectionaries. He was arrested by the contents of his newly-found treasure: his heart was deeply touched, and he resolved to devote himself to a spiritual life. He separated himself from his friends and fellow-students, and withdrew into the Augustine convent at Erfurt.

Here he spent the next three years of his life—years of peculiar interest and significance; for it was during this time that he laid, in the study of the Bible and of Augustine, the foundation of those doctrinal convictions which were afterward to rouse and strengthen him in his struggle against the papacy. He describes very vividly the spiritual crisis through which he passed, the burden of sin which so long lay upon him, 'too heavy to be borne;' and the relief that he at length found in the clear apprehension of the 'forgiveness of sins' through the grace of Christ.

In the year 1507, L. was ordained a priest, and in the following year he removed to Wittenberg, destined to derive its chief celebrity from his name. He became a teacher in the new university, founded there by Elector Frederick of Saxony. At first, he lectured on dialectics and physics, but his heart was already given to theology,

MARTIN LUTHER.

and in 1509 he became a Bachelor of Theology, and began lecturing on the Holy Scriptures. His lectures made a great impression, and the novelty of his views began to excite attention. 'This monk,' said the rector of the university, 'will puzzle our doctors, and bring in a new doctrine.' Besides lecturing, he began to preach, and his sermons reached a wider audience, and produced a still more powerful influence. His words, as Melanchthon said, were 'born not on his lips, but in his soul,' and they moved profoundly the souls of all who heard them.

In 1510 or 11, he was sent on a mission to Rome, and he has described vividly what he saw and heard there. His devout and unquestioning reverence, for he was yet in his own subsequent view 'a most insane papist,' appears in strange conflict with his awakened thoughtfulness and the moral indignation at the abuses of the papacy which was beginning to stir in him.

On L.'s return from Rome, he was made a Doctor of the Holy Scriptures, and his career as a Reformer may be said to have commenced. The system of indulgences had reached a scandalous height. The idea that it was in the power of the church to forgive sin, had gradually grown into the notion, widely spread, that the pope could issue pardons of his own free will, which, being dispensed to the faithful, exonerated them from the consequences of their transgressions. The sale of these pardons had become an organized part of the papal system. Money was largely needed at Rome, to feed the extravagances of the papal court; and its numerous emissaries sought everywhere to raise funds by the sale of 'indulgences,' as they were called, for the sins of frail humanity: the principal of these was John Tetzel, Dominican friar, who had established himself at Jüterboch, on the borders of Saxony. L.'s indignation at the shameless traffic which this man carried on finally became irrepressible: 'God willing,' he exclaimed, 'I will beat a hole in his drum.' He drew out 95 theses on the doctrine of indulgences, which he nailed up on the gate of the church at Wittenberg, and which he offered to maintain in the university against all impugners. The general purport of these theses was to deny to the pope all right to forgive sins: 'If the sinner was truly contrite, he received complete forgiveness. The pope's absolution had no value in and for itself.'

This sudden and bold step of L. was all that was necessary to awaken a widespread excitement. The news of it spread rapidly far and wide. It seemed 'as if angels had carried it to the ears of all men.' Tetzel was forced to retreat from the borders of Saxony to Frankfort-on-the-Oder, where he drew out and published a set of counter-theses, and publicly committed those of L. to the flames. The students at Wittenberg retaliated by burning Tetzel's theses. The elector refused to interfere, and the excitement increased as new combatants—

Hochstratten, Prierias, and Eck—entered the field. Eck was an able man, and an old friend of L.'s, and the argument between him and the Reformer was especially vehement.

At first, the pope, Leo. X., took little heed of the disturbance; he is reported even to have said when he heard of it, that 'Friar Martin was a man of genius, and that he did not wish to have him molested.' Some of the cardinals, however, saw the real character of the movement, which gradually assumed a seriousness evident even to the pope; and L. received summons to appear at Rome, and answer for his theses. Once again in Rome, it is unlikely he would ever have been allowed to return. His university and the elector interfered, and a legate was sent to Germany to hear and determine the case. Cardinal Cajetan, the legate, was little fitted to deal with Luther. He would enter into no argument with him, but merely called upon him to retract. L. refused, and departed, in fear of capture, from Augsburg, whither he had gone to meet the papal representative. The task of negotiation was then undertaken by Miltitz, a German, and envoy of the pope to the Saxon court, and by his greater address, a temporary peace was obtained. This did not last long. The Reformer was too deeply moved to keep silent. 'God hurries and drives me,' he said; 'I am not master of myself: I wish to be quiet, and am hurried into the midst of tumults.' Dr. Eck and he held a memorable disputation at Leipzig, in which the subject of argument was no longer merely the question of indulgences, but the general power of the pope. The disputation, of course, came to no practical result; each controversialist claimed the victory, and L. in the mean time made progress in freedom of opinion, and attacked the papal system as a whole more boldly. Erasmus and Hutten joined in the conflict, which waxed more loud and threatening.

In 1520, the Reformer published his famous address to the 'Christian Nobles of Germany.' This was followed in the same year by a treatise *On the Babylonish Captivity of the Church.* In these works, both of which circulated widely, and powerfully influenced many minds, L. took firmer and broader ground; he attacked not only the abuses of the papacy, and its pretensions to supremacy, but also the doctrinal system of the Church of Rome. 'These works,' Ranke says, 'contain the kernel of the whole Reformation.' The papal bull was issued against him; the dread document was burned Dec. 10, before an assembled multitude of doctors, students, and citizens at the Elster Gate of Wittenberg. One of the professors lighted the fire, and L. threw the papal bull on it, and a copy of the canon law was flung after it. Germany was convulsed with excitement. Eck (who had been the chief agent in obtaining the bull) fled from place to place, glad to escape with his life, and L. was everywhere the hero of the hour.

Charles V. had at this time succeeded to the empire, and he convened his first diet of the sovereigns and states at Worms. The diet met in the beginning of 1521, an order was issued for the destruction of L.'s books, and he himself was summoned to appear before the diet, a safe-conduct from the emperor being granted him for this purpose. This was above all what he desired—to confess the truth before the assembled powers of Germany. He resolved to obey the summons, come what would. All Germany was moved by his heroism; his journey resembled a triumph; the threats of enemies and the anxieties of friends alike failed to move him. 'I am resolved to enter Worms,' he said, 'though as many devils should set at me as there are tiles on the house-tops.' His appearance and demeanor before the diet, and the firmness with which he held his ground, and refused to retract, all make a striking picture. 'Unless I be convinced,' he said, 'by Scripture and reason, I neither can nor dare retract anything, for my conscience is a captive to God's word, and it is neither safe nor right to go against conscience. There I take my stand. I can do no otherwise. So help me, God. Amen.'

On his return from Worms, he was seized, at the instigation of his friend, the Elector of Saxony—who feared for him as in 21 days his safe-conduct would expire—and safely lodged in the old castle of the Wartburg. The affair was made to assume an aspect of violence, but in reality it was designed to secure him from the destruction which his conduct at Worms would certainly have provoked. He remained in this shelter about a year, concealed in the guise of a knight. His chief employment was his translation of the Scriptures into his native language. He composed various treatises besides, and injured his health by sedentary habits and hard study. His imagination became morbidly excited, and he thought he saw and heard the evil one mocking him while engaged in his literary tasks. On one occasion, he hurled his inkstand at the intruder, and made him retreat. The subject of the personality and presence of Satan was a familiar one with L., and he has many things about it in his *Table-talk*.

The disorders which sprang up in the progress of the Reformation recalled L. to Wittenberg. He felt that his presence was necessary to restrain Carlstadt and others, and defying any dangers to which he might still be exposed, he returned to the old scene of his labors, rebuked the unruly spirits who had acquired power in his absence, and resumed with renewed energy his interrupted work. L's literary activity in these years was amazing. He is said to have published 130 treatises in 1522, and 83 in 1523. At Wittenberg he strove to arrest the excesses of the Zwickau fanatics, and counselled peace and order to the inflamed peasants, while he warned the princes and nobles of the unchristian cruelty of many of their doings, which had driven the people to exasperation and

frenzy. At no period of his life was he greater than then in the stand which he made against lawlessness on the one hand and tyranny on the other. He vindicated his claim to be a Reformer in the highest sense by the wise and manly part which he acted in this great social crisis in the history of Germany.

His next act of importance was not so commendable. Although he had been at first united in a common cause with Erasmus, estrangement had gradually sprung up between the scholar of Rotterdam and the enthusiastic reformer of Wittenberg. This came to an open breach 1525, when Erasmus published his treatise *De Libero Arbitrio*. L. immediately followed with his counter-treatise, *De Servo Arbitrio*. The controversy raged loudly between them; and in the vehemence of his hostility to the doctrine of Erasmus, L. was led into various very questionable assertions, besides indulging in wild abuse of his opponent's character. The quarrel was an unhappy one on both sides; and it must be confessed there is especially a lack of generosity in the manner in which L. continued to cherish the dislike which sprang out of it.

In the same year, L. married Katharina von Bora, one of nine nuns, who, under the influence of his teaching, had emancipated themselves from their religious vows. The step rejoiced his enemies, and even alarmed some of his friends like Melanchthon; but it greatly contributed to his happiness, while it served to enrich and strengthen his character. All the most interesting and touching glimpses which we get of him henceforth are in connection with his wife and children.

Two years after his marriage, he fell into a dangerous sickness and depression of spirits, from which he was aroused only by the dangers besetting Christendom from the advance of the Turks. Two years later, 1529, he engaged in his famous conference at Marburg with Zwingli and other Swiss divines. In this conference, he obstinately maintained his peculiar views as to the sacrament of the Lord's Supper (q.v.: see also IMPANATION); and as in the controversy with Erasmus, distinguished himself more by the inflexible dogmatism of his opinions, than by the candor and comprehensiveness of his arguments, or the fairness and generosity of his temper. Aggressive and reforming in the first stage of his life, and while he was dealing with practical abuses, he was yet in many respects essentially conservative in his intellectual character, and he shut his mind pertinaciously after middle life to any advance in doctrinal opinion. The following year found him at Coburg, while the diet sat at Augsburg. It was deemed prudent to intrust the interests of the Prot. cause to Melanchthon, who attended the diet, but L. removed to Coburg, to be conveniently at hand for consultation. The establishment of the Prot. creed at Augsburg marks the culmination of the German Reformation; and the life of

Luther thereafter through 16 years possesses comparatively little interest. He died at Eisleben, the place of his birth; his last breath a prayer of humble faith, and a confession of Christ as his Savior.

Luther's character presents an imposing combination of great qualities. Endowed with broad human sympathies, massive energy, manly and affectionate simplicity, and rich, though sometimes coarse humor, he was at the same time a spiritual genius. His intuitions of divine truth were bold, vivid, and penetrating, though not always comprehensive; and he possessed the art which God alone gives, of kindling other souls with the fire of his own convictions, and awakening them to a higher consciousness of duty. He was a leader of men, therefore, and a Reformer in the highest sense. His powers were fitted to his appointed task: it was a task of titanic magnitude; and he was a Titan in intellectual robustness and moral strength and courage. He recognized himself as accomplishing what he did only through the Divine energy which swayed and used him.

Reckoned as a mere theologian, there are others who take higher rank. There is a lack of patient thoughtfulness and philosophical temper in his doctrinal discussions; but the absence of these qualities gave wings to his bold, sometimes crude conceptions, and enabled him to triumph in the struggle for life or death in which he was engaged. To initiate the religious movement which was destined to renew the face of Europe, and give a nobler and more enduring life to the Saxon nations, required a gigantic will, which, instead of being crushed by opposition, or frightened by hatred, should only gather strength from the fierceness of the conflict before it. To clear the air thoroughly, as he himself said, thunder and lightning are necessary; and he was well content to represent these agencies in the great work of Reformation in the 16th c. On the whole, history presents few greater characters—few that excite at once more love and admiration; few in which tenderness, humor, and a certain picturesque grace and poetic sensibility more happily combine with a lofty, sometimes rugged sublimity.

Luther's works are very voluminous, partly in Latin, partly in German. Among those of more general interest are *Table-talk*, *Letters*, and *Sermons*. De Wette has given to the public a copious and valuable edition of his *Letters*, which, with his *Table-talk*, are the chief authority for his life. Of earlier editions the most complete is that by Walch (1740-53); and of later, the Erlangen-Frankfort editions (German writings 1826-57; Latin writings 1829-86), and that published at Weimar (1883 et seq.). Of accounts of his life may be mentioned those by Meurer (3d edition, 1870); Köstlin (4th edition, 1889), English translation (1883); and Peter Bayne (1887). Consult also Beard, *Martin Luther and His*

Reformation in Germany; Tulloch, *Leaders of the Reformation;* and Lindsay, *Luther and the German Reformation* (1900). For Roman Catholic view of Luther consult: M. Evers, *M. Luther, Lebensund Charakterbild* (1883-91); Verres, *Luther* (1884); Janssen, *History of the German People* (1900).

LUTHERAN, a. *lū'thėr-ăn:* pertaining to *Luther* or his doctrines: N. a follower or disciple of Luther. LU'THERANISM, n. *-izm,* the doctrines of Luther.

LU'THERAN CHURCH, EVANGELICAL: principal Protestant communion in n. Europe; first transplanted to the United States by a Dutch colony to New York, 1623; followed by Swedes settling on the Delaware at Wilmington, 1638, who afterward joined the Prot. Episc. Church, to whom the 'Old Swedes' Church there now belongs, as does also the one in Philadelphia. The first German Lutherans came about the same time to New York, though not in considerable numbers till 1683, nor did they then have a pastor or congregation of their own. The first German Lutheran church organized in the United States was at Falckner's Swamp, now New Hanover, Penn., where the Rev. Justus Falckner was first pastor, about 1703. From that time the German immigration increased very rapidly. In 1710, 4,000 driven from the Palatinate by persecution arrived in New York, and settled in New York, Pennsylvania, and North Carolina; 1734, a large colony went to Georgia. Gradually, however, Pennsylvania, with its liberal government, absorbed the great bulk of the increasing immigration, so that by 1750 there were in that state about 60,000 Lutherans, while others were scattered through every state from Maine to Georgia. There was, however, little or no vital or organic union between these or between them and the Lutheran church in Europe, until Dr. Henry Melchior Muhlenberg was sent from Halle, by Franke, at the urgent joint request of the three congregations at Philadelphia, Falckner's Swamp, and The Trappe, now New Providence, Penn. He arrived at Philadelphia, via Charleston, S. C., 1742, Nov. 25, and soon brought order out of confusion, union out of discord, and effected regular church organizations and discipline where before indifference, strife, and lawlessness had prevailed. The basis of union on which he everywhere insisted was the Augsburg Confession, the authorized confession of faith of the Lutheran church everywhere since 1530. It hinges on the doctrines of the supremacy of the Bible and justification by faith alone; insists on belief in the Trinity; the incarnation and death of Christ for the redemption of man; the innate sinfulness of man, the necessity of regeneration through the power of the Holy Spirit; justification not by works but by faith, imputed to man for righteousness, and bringing forth good works; declares that the ministry has been appointed to preach the Gos-

pel and administer the sacraments, through which the Holy Spirit is given, which works in man faith and regeneration, that through baptism grace is offered, and children thereby presented to God, who receives them into His favor; that the body and blood of Christ are truly present and dispensed to the communicants in the 'Lord's Supper,' but their efficacy depends on the apprehension and reception by faith, on the part of the communicant, of the words of institution and the promise of God attached thereto: that there is one everlasting holy Christian Church, consisting of the congregation of true believers, and dependent for its unity, not on uniformity of ceremonies, but on agreement concerning the doctrine of the Gospel and the sacraments; that on the last day Christ will appear in judgment, give eternal life to the godly and elect, and condemn the ungodly and devils to endless punishment. Muhlenberg also made provision for the proper ordering of the public worship, and administration of the sacraments, in accordance with the general cultus of the Lutheran Church. He formulated a common liturgy, different from that of the Swedish and based on that introduced in Germany by Luther. Its essential features are retained to this day, and consist of the Introit, with the Gloria Patri; the Confession of Sin, with the Kyrie; the Gloria in Excelsis; the Gospels and Epistles, with the Collect; the Apostles' Creed; and ending with the Lord's Prayer. At the same time the use of this or any specified ritual is not obligatory; hence considerable diversity prevails, and two main tendencies have been developed, one favoring a full liturgical service, the other rejecting all liturgical forms. Equally important with the two preceding measures for the development of the Lutheran Church was the formation, 1748, Aug. 14 and 15, at Philadelphia, of the first Lutheran Synod in the United States. This, too, was effected chiefly by Muhlenberg, and was in accord with the general polity of the church. Its effect was to merge pastors and congregations into a joint body, of which each congregation is an organic part, and receives through lay representation a voice in the government of the church as a whole, while the decisions of the united body have binding force with each congregation and minister. The parity of the ministry is maintained, and the rights of the laity recognized. At this first meeting the first synodical ordination took place, and it was resolved to meet annually, alternating between Philadelphia and Lancaster. Muhlenberg is justly called the founder of the Lutheran Church in America. From this time on until the revolutionary war the church grew with great rapidity. Numerous churches were built from the Delaware to beyond the Susquehanna, and not a few also in New York, New Jersey, Maryland, and Virginia. At Ebenezer, Ga., an orphan asylum was founded 1749. At Philadelphia Dr. Kunze opened a private school for

higher education 1773; but the war put an end to it, and caused a general decadence of religious activity throughout the country. 1786 the New York Synod was formed; 1803 the Synod of North Carolina; 1817 the Synod of Ohio; 1820 the Synod of Maryland and Virginia. The first distinctively Lutheran theological school was founded at Hartwick, N. Y., 1816, through Franklin College, at Lancaster, Penn.; founded by the state 1787, was also Lutheran. By the beginning of the 19th century the English-speaking members of the church had become numerous enough to claim recognition. They demanded in many places to have at least part of the services in the English language, which the Germans usually strenuously opposed; hence not a little dissension. 1809, the first, and for a long time the only, Lutheran church where the services were exclusively English, was built. The Pennsylvania Synod proposed the formation of a General Synod for the greater unification of the Lutheran Church in America; and three-fourths of the existing synods having agreed to it, the plan was consummated at Hagerstown, Md., 1820, Oct. 22, when representatives of the synods of New York, Pennsylvania, North Carolina, and Maryland met and adopted a constitution, which was ratified, 1821, by all of these synods separately, except that of New York. Before the second meeting of the General Synod, the Synod of Pennsylvania withdrew from it, yielding to the fear of undue centralization of authority and infringement on individual liberty. This led to the disruption of the Pennsylvania Synod by the formation of the West Pennsylvania Synod, comprising all the state w. of the Susquehanna, which joined the General Synod. 1826, the latter founded the Theological Seminary of the General Synod at Gettysburg, and soon afterward Pennsylvania College at the same place, besides showing remarkable activity in the way of publications, educational associations, 'mite societies,' mission-work domestic and foreign, and Sunday schools. In 1853, the Old Synod of Pennsylvania came into the General Synod, as that of New York had done 1837; that of the West, 1840; that of East Ohio, 1841; that of East Pennsylvania, which had separated from the Old in 1842, though occupying the same territory, on account of the demand for English preaching, joined in 1843; as did the Allegheny and s.w. Virginia; the Miami, 1845; Illinois and Wittenberg, 1848; Olive Branch, 1850; the Texas, the North Illinois, and the Pittsburg, 1853; the Kentucky, the Central Pennsylvania, and English District of Ohio, 1855; the North Indiana, the South Illinois, and the English Iowa, 1857; the Melanchthon, 1859. In 1860, the General Synod embraced 26 synods, 864 ministers, and 164,000 communicants, being two-thirds of the Lutheran Church in America. The civil war caused the withdrawal of all s. of the Potomac, with their 125 ministers and 21,098 communicants. The most serious defection,

however, occurred in 1866, when a separation on questions largely doctrinal took place, and deferred indefinitely all hope of a general organic union of the Lutheran Church in this country. The separation grew out of the action of the General Synod in the reception of the Franckean Synod. Reception was granted simply with the understanding that the synod should formally adopt the Augsburg Confession at its next meeting. The delegates of the Pennsylvania Synod protested, and withdrew from the convention. In consequence of parliamentary ruling as to the rights of its delegates to the next convention, the synod sundered its connection with the body, being followed by those of New York and Pittsburg (a schism resulting in both these, however), by the English Ohio, the Minnesota, the Texas, and the Illinois, the last likewise being disrupted. Since then several new synods have arisen in the west and joined the General Synod; so that the latter aggregates (1907) 1,307 ministers, 1,729 congregations, and 262,821 communicants. In 1866, Dec., the synods that had just withdrawn from the General Synod, besides a number of others that had never belonged, met at Reading, Penn., and took measures for the organization of 'The General Council of the Evangelical Lutheran Church in America.' 1867, Nov. 20, this organization was consummated at a meeting at Fort Wayne, Ind., 12 synods being represented. The great distinctive characteristic of the council was its adherence to the strict letter of the Augsburg Confession as essential to church membership, over against the more liberal attitude of the General Synod. Its supreme interest is the preservation of pure Lutheran doctrine and the development of a sound Lutheran cultus and practice. The seminary at Philadelphia is its theological school. There belong to it (1907) 1,393 ministers, 2,136 congregations, and 414,832 communicants. A third great general organization in the Lutheran Church is the Synodical Conference, formed at Milwaukee, Wis., 1872, July, by a union of the synods of Ohio, Missouri, Wisconsin, Minnesota, Illinois, and the Norwegian Synod. Doctrinal controversies that had been going on between separate synods before the union, soon reappeared afterward. The chief difference was on the doctrine of predestination and conversion, the Missouri Synod heading the ultra-Lutheran side, and denouncing the others, headed by the Ohio Synod, as synergistic; while the latter accused the former of Calvinism. As the result of this controversy, the Ohio and Norwegian synods withdrew from the conference. The Synodical Conference includes (1907) 2,385 ministers, 3,932 congregations, and 624,122 communicants. The leading body of the Synodical Conference is the Missouri Synod, with its principal theological seminary at St. Louis, Mo. Besides the three general bodies mentioned above, the synods s. of the Potomac are organized into the United Synod of the

South, numbering (1907) 226 ministers, 448 congregations, and 45,383 communicants; and the United Norwegian Synod, with 453 ministers, 1,325 congregations, and 152,843 communicants. There are also 19 independent synods, the statistics of which in 1907 were as follows: Ohio Synod, 547 ministers, 705 congregations, and 106,411 communicants; Iowa Synod, 490 ministers, 880 congregations, and 95,311 communicants; Norwegian, 359 ministers, 943 congregations, and 83,079 communicants; Norwegian Free, 140 ministers, 400 congregations, 40,000 communicants; and the Buffalo, Hauge's, Eilsen's, Texas, Michigan, Danish in America, Icelandic, Immanuel, Finnish Snomai; Danish United, Slovakian, Finnish National, Finnish Apostolic, and the Norwegian Church of the Lutheran Brethren Synod, and the Synod of the independent congregations, which have a total of 572 ministers, 1,311 congregations, and 132,631 communicants, making a grand total for all synods of 7,872 ministers, 13,919 congregations, and 1,957,433 communicants.

In the early days of American Lutheranism isolation and other causes produced a great diversity in the forms and orders of worship in the scattered Lutheran congregations. This was much deprecated by many leading Lutheran divines. It was felt to act as an element of disunion, sometimes of disorder, and in 1881-3 it was decided to compile and secure the authorization of a Common Order of Service 'on the basis of the common consent of the pure Lutheran liturgies of the 16th century.'

The Service in the Common Service begins with the Confession of Sins, followed by the Declaration of Grace, thus corresponding with the Confession and Absolution with which morning and evening prayer begins in the Anglican Book of Common Prayer. Then comes an Introit with the Gloria Patria, or ascription of glory to the three Persons of the Trinity. Next is the 'lesser litany' or Kyrie, followed by the 'Gloria in Excelsis,' the great liturgic hymns of both Eastern and Western Christianity. Then comes the Salutation and Response. The Collect for the day ushers in the reading of the Epistle, a selection from the writings of the Apostles, and the Gospel—a passage from one of the Evangelists. Very fittingly the Creed, known as the Apostles' Creed, follows the Gospel, after which the principal Hymn of the service is sung. The Lutheran Church is remarkably rich in hymns, and the old airs of the German musicians are often reproduced, while in English-speaking Lutheran Churches the great German hymns of Luther, Rinkart and others are sung in an English version. To the singing of a hymn succeeds the Sermon. The alms of the people are then collected, and after the Offertory the General Prayer is said, the Holy Communion follows. Besides the above described office the Common Service has offices for Matins and Vespers.

LUTHERANS.

Consult: Wolf, *The Lutherans in America* (1889); Graebner, *Geschichte der Lutherischen Kirche in America* (1891); Jacobs, *A History of the Evangelical Lutheran Church in the United States* (1893); Jacobi, *Lutheran Encyclopedia* (1899).

See CONCORD, BOOK OF; AUGSBURG CONFESSION; CONSUBSTANTIATION; CREEDS AND CONFESSIONS; IMPANATION; LORD'S SUPPER; LUTHERANS; REAL PRESENCE; REFORMATION; SYNERGISM; TRANSUBSTANTIATION; SUBPANATION.

LUTHERANS, *lū'thėr-anz:* designation applied originally by their adversaries to the Reformers of the 16th c., and afterward distinctively appropriated among Protestants themselves to those who took part with Martin Luther against the Swiss Reformers, particularly in the controversies regarding the Lord's Supper. It is so employed to this day, as the designation of one of the two great sections into which the Prot. Church was soon unhappily divided, the other being known as the *Reformed* (q.v.). To the end of Luther's life, harmony subsisted between him and his friend Melanchthon; but already there were some who stood forth as more Lutheran than Luther, and by whom Melanchthon was denounced as a *Crypto-Calvinist* and a traitor to evangelical truth (see CRYPTO-CALVINISM). After Luther's death, this party became more confident, and holding by Luther's words, without having imbibed his spirit, changed his evangelical doctrine into a dry scholasticism and lifeless orthodoxy, while extreme heat and violence against their opponents were substituted in the pulpit itself for the zealous preaching of the gospel. The principal seat of their strength was in the Univ. of Jena, founded 1557 for this very object, and which maintained their cause against Wittenberg. The utmost illiberality characterized this party; and so far as governments came under their influence, extreme intolerance was manifested, the measures adopted against those who differed from them being frequently of a persecuting nature. Few controversies have been conducted with more bitterness than the *Sacramentarian Controversy* (q.v.).

Toward the end of the 17th century, the Lutherans of Germany found a new subject of hostility in the *Pietists* (q.v.), against whom they stirred up the passions of the multitude, and instigated the government to severity.—In the 18th c., they came into conflict with *Rationalism* (q.v.), which may be regarded as a consequence of the state of things in Germany during the previous period of unprofitable theological strife.—When, after the wars of the French Revolution were over, the Prussian government formed and carried into execution a scheme for the union of the Lutheran and Reformed churches into one national church (see PRUSSIA), an active opposition arose on the part of those who then began to be known as *Old Lutherans.* Separate congregations were formed, and an attitude of open hostility to the government was

assumed by some; while others, more moderate, but holding the same theological opinions, continued to maintain these opinions within the *United Evangelical Church.* Among the latter were some of the most eminent divines in Germany, as Hengstenberg, Olshausen, Guericke, and Tholuck. The separatists were for some time severely dealt with by the government, and consequently many left their native country to found Old Lutheran communities in America and Australia. This took place chiefly about 1837. After that time, greater toleration was practiced, and now the Old Lutherans form a legally recognized ecclesiastical body in Prussia. For some time after the political excitement of 1848, those who held the Lutheran doctrines within the national or United Evangelical Church of Prussia exhibited considerable uneasiness, and a strong desire for a position more consistent with their ecclesiastical traditions; but more recently this feeling seems to have been considerably allayed.

Lutheranism is the prevailing form of Protestantism in Saxony, Hanover, and the greater part of n. Germany, as well as in Würtemberg; it prevails to a considerable extent also in other parts of Germany. It is the national religion of Denmark, Sweden, and Norway; and there are Lutheran churches in Holland, France, Poland, etc. Among the Lutheran symbolical books, the *Augsburg Confession* (q.v.) holds the principal place; though the supreme authority of the Holy Scriptures is fully recognized. The chief difference between the Lutherans and the Reformed is as to the *real presence* of Christ in the sacrament of the Supper; the Lutherans, though rejecting *transubstantiation,* holding a doctrine of the Lord's Supper which involves the true presence of the body and blood of Christ, not in a local or physical, but in a supernatural, spiritual, and incomprehensible manner. This doctrine has been largely called the doctrine of *consubstantiation* by its opponents among Protestants; but that term has been expressly and officially rejected by Lutherans themselves (see LORD'S SUPPER; IMPANATION; TRANSUBSTANTIATION). Some of their extreme theologians have asserted not only the presence of the human nature of Christ in the Lord's Supper, as Luther did, but the absolute omnipresence of his human nature. Other points of difference relate to the allowance of Christian worship of things *indifferent* (*adiaphora*); and many of those things at first retained as merely tolerable by Luther and his fellow-reformers have become favorite and distinguishing characteristics of some Lutheran churches—as images and pictures in places of worship, clerical vestments, the form of exorcism in baptism, etc. Among the Old Lutherans of Prussia, particularly the separatists, a strong tendency to exaggeration in these distinctive peculiarities has manifested itself.

In many Lutheran churches, the doctrines of Luther, and of their symbolical books, have long given place, in

a great measure, to Arminianism, and to a system of religion inconsistent with Luther's doctrine of justification by faith. In some quarters, particularly in Norway and Sweden, a reaction has of late years appeared; and many Lutheran divines of Germany are strenuous supporters of the 'evangelical' doctrines of the Reformers.

In its constitution, the Lutheran Church is generally *unepiscopal*, without being properly *presbyterian*. In Denmark and Sweden there are bishops, and in Sweden an archbishop (of Upsal), but their powers are very limited. Where Lutheranism is the national religion, the sovereign is recognized as the supreme bishop, and the church is governed by consistories appointed by him, and composed both of clergymen and of laymen. The members of congregations ordinarily possess almost no share in the governmental power in the Lutheran churches of Europe; in the United States a more representative system has been adopted. See LUTHERAN CHURCH, EVANGELICAL; UNITED EVANGELICAL CHURCH.

LUTHERN, n. *lō'thėrn* [F. *lucarne*, a dormer-window —from L. *lucer'na*, a lamp]: a dormer or garret window.

LU'TRA. See OTTER.

LÜTZEN, *lüt'sėn*, BATTLES OF: two great battles near Lützen, a small town (pop. abt. 3,000) in the Prussian province of Saxony. The first was 1632, Nov. 6 (N. S. 16). Gustavus Adolphus, who had moved in the direction of Bavaria, being recalled from his designs of conquest there by the advance of Wallenstein on Saxony, united his forces with those of Duke Bernard of Saxe-Weimar, and attacked the imperialists at Lützen. The fortune of the day was very various; but notwithstanding the death of Gustavus Adolphus, victory remained with the Swedes, and Wallenstein was compelled to resign to them the field of battle. About 9,000 men were killed or severely wounded.

The second battle, 1813, May 2, was somewhat further s., at the village of Groszgörschen. It was the first great conflict of the united Russian and Prussian army with the army of Napoleon in that decisive campaign. The allies gained at first great successes, but the French were left in possession of the field at the close of the day; their superiority in numbers securing them the victory, though they lost about 12,000 men, and the allies 10,000. By this battle, the French regained possession of Saxony and the Elbe.

LUVERNE, *lū-vėrn'*: Minn., village, county-seat of Rock county; on the Rock river, and on the Chicago, St. P., M. & O. and the Chicago, R. I. & P. railroads; about 200 miles southwest of Saint Paul, and 30 miles northeast of Sioux Falls, S. Dak. Luverne is situated in an agricultural region in which are granite quarries and fire-clay deposits. The chief industrial establishments are flour-mills, grain elevators, brick and lumber yards, and cream-

eries. Large nurseries are in the vicinity. The trade is principally in flour, granite, grain, live-stock, nursery products and dairy products. Pop. 2,279.

LUXATE, v. *lŭks'āt,* or LUX, v. *lŭks* [L. *luxātus,* put out of joint, loosened]: to remove from its proper place, as a joint; to put out of joint; to dislocate. LUX'ATING, imp. LUX'ATED, pp.: ADJ. put out of joint; sprained. LUXATION, n. *lŭks-ā'shŭn* [F.—L.]: a putting out of joint; a dislocation.

LUXEMBOURG, *lüks-ŏng-bôr',* FRANÇOIS HENRI DE MONTMORENCY, Duke of, Marshal of France: famous general of Louis XIV.: 1628, Jan. 8—1695, Jan. 4; b. Paris; posthumous son of François de Montmorency, Count of Bouteville, who was beheaded on account of a duel. His aunt, mother of the Great Condé, brought him up as a companion of her son, with whom he took part in the disturbances of the Fronde, signalizing himself in the battles then fought. Being afterward received into favor by Louis XIV., he served as a volunteer under Turenne in Flanders (1667), in Franche Comté as the lieutenant general of Condé, and in the Netherlands, where the battles of Grool, Deventer, Zwoll, etc., greatly increased his reputation. He had, however, the misfortune to embroil himself in a quarrel with the all-powerful Louvois, the results of which were disastrous to his prospects for a time. He assumed the title of Luxembourg on marrying the heiress of that house. Some of his military exploits were very daring, and were executed with great skill; his retreat from Holland, in particular, being executed in such a masterly manner that it placed him among the foremost generals of his age: but he largely participated in the savage burning of towns, and desolating of conquered districts, which disgraced the French arms at that period, though it is believed that in this he only carried out the positive instructions which he received from Louvois (q.v.). In the campaign of 1677, he defeated the Prince of Orange at Mont-Cassel, took St. Omer, and compelled the prince to raise the siege of Charleroi. After the Peace of Nimeguen, Louvois, as it has long been reported, attempted to accomplish his destruction by means almost incredible. Having got possession of a contract between Luxembourg and a wood-merchant, he caused it to be changed so that it became a contract with the devil. Upon this, Luxembourg was summoned before the *Chambre Ardente,* and obeyed the citation, though his friends advised him to leave the country. He was thrown into the Bastile, and there confined in a dark dungeon. Rousset, *Histoire de Louvois,* succeeds in throwing doubt on a quarrel with Louvois having occasioned this imprisonment. After 14 months, Luxembourg was acquitted and released, but banished to one of his domains, where he lived forgotten for ten years, at the end of which time the king appointed him to the command of the army in Flanders. 1690, July 1,

he gained a victory over the Prince of Waldeck at Fleurus; 1692, Aug. 4, and 1693, July 29, over William III. of England, at Steenkirk and at Neerwinden. He took Charleroi 1693, Oct. 12.

LUXEMBURG, *lŭks'ĕm-bėrg*, D. *lüks'em-bėrg:* old German county, afterward a duchy, which, about the 12th c., came into possession of the Counts of Limburg, who assumed the title Counts of Luxemburg. It was next acquired by Burgundy, and in this way came into the hands of Austria. By the Peace of Campo Formio (q.v.), it was ceded to France 1797. In 1814, it was elevated to the rank of a grand duchy of the German Confederation, and given to Holland in compensation for the loss of Nassau. In 1830, when Belgium formed itself into an independent kingdom, Luxemburg was divided between it and Holland—the latter, however, retaining little more than the fortress of Luxemburg, till 1839, when, by a treaty signed in London, a new division was made more favorable to Holland.

Belgian Luxemburg, or Luxembourg, largest province of Belgium, forming the s.e. corner of the country, contains 1,706 English sq.m.; pop. (1900) 219,210. It is traversed from s.w. to n.e. by a branch of the Ardennes Mts. which nowhere exceed 2,000 ft. in height. The surface is in general extremely rugged, much covered with woods and morasses. The soil is poor. About a third of the arable land is devoted to pasture, great numbers of cattle, sheep, and horses being reared for export. The horses are a strong, hardy breed, much prized both for agricultural and military purposes. The mineral wealth of the country consists of iron, lead, copper, marble, freestone, slate, gypsum, etc. The chief manufactures are cloth, tulle, earthen-ware, leather, nails, and potash; and the principal articles of export are hemp, flax, oak-bark, timber, iron, leather, cheese, etc. The capital of the province, Arlon, has a pop. of 4,200.

Dutch Luxemburg, e. of the Belgian province of Luxemburg, comprises 990 Eng. sq.m.; pop. (1900) 236,-543. It is connected with the Netherlands in the person of the sovereign, but has a constitution and administration of its own. The king of Holland, as grand duke, appoints a deputy-governor. Dutch Luxemburg was a part of the Germanic confederation from its formation 1815, till its dissolution 1866. In 1867, its neutrality was guaranteed by the Great Powers (see Germany). Its present constitution dates from 1868. The chamber of deputies consists of 41 members, chosen for 6 years by direct vote in the electoral districts. The inhabitants are mainly of Low German stock: Walloon is spoken on the w. border: the official language is French. The country is hilly. The chief products are wine, corn, hops, hemp, and flax. In the e. districts there are iron mines, and lime and slate quarries. The capital is Luxemburg.

LUX'EMBURG: capital of Dutch Luxemburg, on the Else or Alsette, 76 m. s. by e. from Liége, 34 m. n. of Metz. Pop. (1900) 20,928. Its situation is beautiful, and has often been compared to that of Jerusalem, being, like the latter, surrounded by escarped rocks, which, excepting the w. side, average 200 ft. in height. The Spaniards, Austrians, French, and Dutch, who successively held possession of the town, so increased and strengthened its fortifications that in the beginning of the 19th c. it was considered to be, with the exception of Gibraltar, the strongest fortress in Europe. Another portion of Luxemburg, called the 'low town,' is at the foot of the precipice, along the banks of the river. Luxemburg has a fine cathedral, various handsome buildings and public institutions. It has manufactures of wax, distilleries, breweries, tanneries, and an extensive general trade. It was formerly garrisoned by Prussian troops; but by the treaty of London 1867, these were withdrawn, and the fortifications demolished.

LUX'OR. See THEBES (in Egypt).

LUXURIANT, a. *lŭg-zū'rĭ-ănt* [L. *luxu'rĭăns,* or *luxu'rĭan'tem,* growing rank, increasing in size—from *luxu'rĭă,* luxury, excess]: very abundant; exuberant in growth; superfluous in abundance. LUXU'RIANTLY, ad. *-lĭ.* LUXU'RIANCE, n. *-rĭ-ăns,* or LUXU'RIANCY, n. *-ăn-sĭ,* strong, vigorous growth; exuberance; excessive growth. LUXURIATE, v. *lŭg-zū'rĭ-āt* [L. *luxu'rĭātus,* indulged in luxury]: to grow to superfluous abundance; to live luxuriously; to revel without restraint in description or fancy. LUXU'RIATING, imp. LUXU'RIATED, pp. LUXU'RIA'TION, n. *-shŭn,* the act of luxuriating; the process of growing exuberantly. LUXURIOUS, a. *lŭg-zū'rĭ-ŭs* [L. *luxurĭōsus,* abounding in luxury]: ministering to or furnished with luxuries; indulging freely or excessively in the pleasures of the table, or in rich and expensive dress and furniture; effeminate; voluptuous; enslaved to pleasure. LUXU'RIOUSLY, ad. *-lĭ.* LUXU'RIOUSNESS, n. *-nĕs,* state of being luxurious; voluptuousness; LUXURY, n. *lŭks'ū-rĭ,* a free or excessive indulgence in rich food, dress, or furniture; anything delightful or grateful to the senses; a dainty or delicacy; any delicious food or drink; in *OE.,* lust; lewdness; luxuriance.—SYN. of 'luxury': voluptuousness; dainty; delicacy; epicurism; effeminacy; lasciviousness; sensuality; gratification.

LUZ, n. *lŭz* [Heb. *luz,* a hazel tree, or, much more probably, the almond-tree; the bone described below]: in Rabbinical legends, an unidentified bone in the human body, destined to be the germ of the glorified body at the resurrection. According to Buxtorf it was thought to be the *os coccygis,* or one of the lumbar vertebræ.

LUZAC, JEAN: Dutch philologist and publicist: b. Leyden, 1746; d. there, 1807. He was of a French Protestant family, was educated for the bar at The Hague, and in 1772 became one of the editors of the *Leyden*

Gazette, a journal of European reputation, controlled since 1738 by his father and uncle. For several years subsequent to 1775 he was its sole editor, in which capacity he became known as a friend or correspondent of Washington, Adams, Jefferson, and many eminent Europeans. He subsequently became Greek professor at the University of Leyden, and in 1795 published an address, *De Socrate Cive,* dedicated to John Adams, whose son, John Quincy Adams, had studied under his direction. During the revolutionary troubles in Holland he was forbidden to lecture on Greek history to his classes; and having refused to obey this injunction, was deprived of his professorship, which was, however, restored to him in 1802 with an increase of salary. Upon being suspended from his professional functions he received a letter from Washington, expressing sympathy in his behalf, and encouraging him to hope for justice. His *Lectiones Atticæ,* a defense of Socrates, was published in 1809.

LUZENBERG, *lô'zĕn-bėrg,* CHARLES ALOYSIUS: American physician: b. Verona, Italy, 1805; d. 1858. Leaving Italy for the United States in his 14th year, he subsequently received a medical education at the Jefferson Medical College of Philadelphia. He removed to New Orleans in 1829, where he made a reputation for brilliant surgery and was enabled to establish the famous New Orleans Medical School. He visited Paris in 1832, where his reputation had preceded him, and he was elected corresponding member of the Paris Academy. His most important work in Louisiana (where he took up his residence again in 1834) was the founding of the Society of Natural History (1839), and the Louisiana Medico-Chirurgical Society (1843), by which science has been much fostered and promoted in the South.

LUZERN′ (plant): See LUCERN.

LUZERNE, *lü-zārn′,* Chevalier ANNE CÉSAR DE LA, LL.D.: 1741—1791, Sep. 14; b. Paris, France: statesman. He received a military education, was aid to the Duke de Broglie in the Seven Years' war, and became maj.gen. of cav. 1762. In 1776, he was appointed French minister to Bavaria, and 1778 to the United States. He actively aided the colonial cause, personally contracted a loan for the relief of the suffering army 1780, and received the thanks of congress and of Washington, and the degree LL.D. from Harvard College. Luzerne co., Penn., was named in his honor. At the time of his death he was French minister to Great Britain.

LUZON, *lô-zŏn′* (Sp. *lô-thōn′*): Philippines, the northernmost island of the Philippine archipelago, lying-south-southwest of Japan and south-southeast of China. On the north is the Bachi channel, connecting the Pacific Ocean and the China Sea; on the south are the San Bernardino Strait, separating it from Sámar, the channels of

the Visayan Sea, and the Tayabas gulf, dividing it from Mindoro. Pop. 3,432,424.

Topography and Physical Geography.—The island is very irregular in shape, elongated from north to south and southeast, and much wider at the north than at the south. It narrows at lat. 14° 30′ where the bay of Manila is, and much more at lat. 14° between Lamón Bay and Tayabas Bay, where an isthmus unites the larger and northwestern part of the island with the smaller southeastern part; it is thus divided into three territorial divisions, Northern Luzon, Central Luzon, and Southern Luzon. The length of Luzon is 283 miles from the north coast to Manila, and from there 225 miles southeast to Babulgun Point; at its widest point near the centre of Northern Luzon it is 138 miles wide; at its narrowest point, the isthmus in lat. 14°, 8 miles wide; area, 43,075 square miles, with dependent islands 44,235 square miles. The mountain system of Luzon consists of three large ranges, the nucleus of which is Caraballo de Baler in the province of Neuva Ecija. The Carabellos Occidentales form the watershed of Northern Luzon, and extend about 150 miles near the western coast and parallel with it; the Sierra Madre range, starting at Carabello de Baler, extends northeast to Cape Engaño; the Carabellos Sur, starting at the same point, extends south to Banahao, then turns to the southeast and terminates near the straits of San Bernardino. This range has several important branches, one ending on the south side of the bay of Baler. Among the more important single mountains the following may be mentioned: Data (8,333 feet), and Burnay (6,376 feet), of the Carabellos Occidentales; Cana (3,830 feet) of Sierra Madre; and Bulusan and Mayón (7,566 feet) of the southern range. The three last mentioned are volcanoes, of which Mayón is the most active. Luzon is well watered; the longest river is the Grande de Cayagán, running nearly the whole length of Northern Luzon; three other large rivers traverse this part of the island, and there are numerous smaller streams. The coast is irregular, and there are numerous bays and excellent ports and harbors, especially on the central and southern coasts.

Commerce and Industries.—There are a number of fine roads in Luzon, which centre at Manila, connecting it with remote points; there is also a railroad from Manila to Dágupan. In 1903, three other railroad lines were proposed, one from Manila to Aparri, following the Pampanga, Magat and Cagayan rivers, another from Manila to Batangas, skirting the west shore of the Bay Lagoon between Muntinlupa and Calamba, and a third from Dágupan to Laoag. All the staple crops of the archipelago grow in abundance, and the chief industries of the island are agriculture, and the development of the products into the advanced forms of manufacture; the mechanical industries are very largely confined to Manila.

Luzon is also rich in forests, having all the woods used in building, as well as the gum-producing, medicinal, and dye trees.

Luzon was the first of the Philippine islands to come under the control of the United States; it was the scene of the earliest military operations against the insurgents, and the base of operations for campaigns of occupation of the other islands. The beginning of civil government under the auspices of the United States was coincident with the occupation of Luzon, and the island is now the seat of the authority of civil government as well as of military domination. Civil government has been established throughout the whole island. The provinces into which Luzon is divided are as follows: Abra, Albay, Ambos Camarines (Norte and Sur), Bataán, Batangas, Benguet, Bulacan, Cagayan, Ilocos (Norte and Sur), Isabela, Laguna, Lepanto-Bontoc, Nueva Ecija, Nueva Vizcaya, Pampanga, Pangasinan, Rizal, Sorsogón, Tárlac, Tayabas, Unión, and Zambales. See PHILIPPINE ISLANDS.

LUZULA, *lū'zū-la:* genus of plants of nat. ord. *Junceæ*; differ from rushes in having three-seeded instead of many-seeded capsule, and in having soft, plain leaves, which are generally covered with thinly-scattered longish hairs. They do not grow in wet places, like rushes, but in woods, pastures, and elevated mountainous situations. The English name, WOOD-RUSH, has sometimes been given to the whole genus, but is appropriate only to some, of which it is the popular name, as *L. sylvatica* and *L. pilosa*, common British species. FIELD-RUSH (*L. campestris*), a plant of very humble growth; the flowering spikes of which, congregated into a close head, their dark color relieved by the whitish yellow of the anthers, profusely adorn dry pastures in spring. It is of little agricultural value. The species which grow under the shade of trees preserve their verdure in winter, adding to the beauty of the scene, and improving the cover for game.

LYALL, *lī'al*, EDNA. See BAYLY, ADA ELLEN.

LYALL, JAMES: American inventor: b. Auchterarder, Scotland, 1836, Sep. 13; d. New York, 1901, Aug. 23. He was brought to this country as a child; when old enough worked at loom-making in his father's shop; was a soldier of the 12th New York infantry during the early part of the civil war; and afterward became a manufacturer of jute and cotton goods and of machines. He designed corset-making machinery and produced the first machine-made corsets ever manufactured. He also invented a water-proof varnish, and in the latter part of the war knapsacks and haversacks waterproofed by his process were largely used in the Union army. The Lyall positive-motion loom, for weaving wide fabrics, was invented by him in 1863. Various other inventions of his are much employed in cotton manufacture. He received many

medals and decorations, including the gold medal of honor from the American Institute, bestowed on him in 1869.

LYART, a. *lī-ėrt* [Gael. *liath*, gray, gray-headed]: in *Scot.* and *OE.*, having gray hairs intermixed; gray.

LYCÆNA, n. *lī-sē'na* [Gr. *lukaina*, a she-wolf]: in *entom.*, copper-butterfly, so called because a bright coppery-red prevails in the wing-coloring, the typical genus of the family *Lycœnidæ*, a family of butterflies, nearly world-wide in distribution.

LYCANTHROPY, n. *lī-kăn'thrō-pĭ*, or LYCANTHRO'PIA [Gr. *lukos*, a wolf; *anthrōpos*, a man]: kind of madness in which men fancy themselves changed into wolves: belief in such a change. LY'CANTHROPES, human beings believing themselves changed into wolves. There has been among almost all savages, and still lingers in civilized lands as a superstition, a belief that men can be transmuted into wolves by Satanic agency, and made to roam through forests and desert places, actuated by the same appetites as the wild beast whose aspect or name they bear. This may have been the origin of the insane delusion as now manifested occasionally in lunatic asylums, in which the transforming power is disease. In some instances the insane conceive themselves dogs (*Cynanthropy*) and other animals, and even inanimate objects; but these are solitary cases, whereas the hallucination of lycanthropy has appeared epidemically, and lycanthropes have literally herded and hunted together in packs. In 1600, multitudes were attacked with the disease in the Jura, emulated the destructive habits of the wolf, murdered and devoured children; howled, walked, or attempted progression upon all-fours, so that the palms of the hands became hard and horny; and admitted that they congregated in the mountains for a sort of cannibalistic or devil's Sabbath. Imprisonment, and even burning, scarcely sufficed to check what grew into a source of public danger. Six hundred persons were executed on their own confession.

LYCAON, *lī-kā'ŏn:* genus of *Canidæ*, in dentition and general osteological structure nearly agreeing with dogs, but resembling hyenas in the form of the head and in having only four toes on each foot. The best ascertained species, *L. venaticus*, the WILD DOG, HYENA DOG, or HUNTING DOG of the Cape of Good Hope, is rather smaller than a mastiff, and has a tall, gaunt form. It is gregarious, and still infests even the neighborhood of Cape Town, committing great depredations on flocks of sheep. It is found over great part of Africa, from the Cape of Good Hope to the valley of the Nile.

LYCAONIA, *lĭk-ā-ō'nĭ-a:* in ancient geography, province in the interior of Asia Minor, n. of Mt. Taurus; bounded e. by Cappadocia, n. by Galatia, w. by Pisidia,

and s. by Isauria and Cilicia. Its boundaries varied at different times. Its cap. was Iconium (q.v.).

LYCEUM, n. *lī-sē'ŭm* [L. *lycēŭm;* Gr. *lukeion,* place in the immediate neighborhood of Athens, consecrated to *Apollo Lyceius,* noted for its shady wood and beautiful gardens, in which Aristotle and the Peripatetics taught]: apartments appropriated to instruction by lectures, etc.: on the *European continent,* a higher school which prepares for the university: in the *United States,* a literary association providing discussions, lectures, etc.

LYCH-GATE, *lĭch'gāt* [Ang.-Sax. *lic* or *lice,* a body, corpse], or CORPSE-GATE: a churchyard gate covered with a roof; very common in many parts of England. The bodies brought for burial are set down under the shelter of the roof while the service is read.

LYCHNIS, *lĭk'nĭs:* genus of plants of nat. ord. *Caryophyllaceæ;* having a tubular 5-toothed calyx; corolla twice as long as the calyx, with a spreading wheel-shaped limb, crowned at the mouth of the tube, and generally divided at the border; ten stamens, and five styles. The species are herbaceous plants, generally perennial, natives of temperate countries. The RAGGED ROBIN (*L. flos-cuculi*) is one of the most frequent ornaments of meadows and moist pastures; the GERMAN CATCHFLY (*L. viscaria*) grows on almost inaccessible precipices; the RED CAMPION (*L. diurna*), and the WHITE CAMPION (*L. vespertina*) abound in fields, hedges, and the borders of woods. The last two are diœcious, and, strangely, the female of the first and the male of the second are very common, while the male of the first and female of the second are rare. The flowers of *L. vespertina* are usually fragrant in the evening. The SCARLET LYCHNIS (*L. Chalcedonica*), native of Asia Minor, is a frequent and brilliant ornament of flower-borders. Some of the species have saponaceous properties.

LYCHNOSCOPE, n. *lĭk'no-skōp* [Gr. *luchnos,* a lamp, a light; *skopeō,* I see]: a small, narrow window near the ground in the chancel of a church, so disposed that through it a person outside may see the priest at the altar during the act of consecration.

LYCIA, *lĭsh'ĭ-a:* country on the s. coast of Asia Minor, extending toward Mount Taurus, and bounded w. by Caria, n. by Phrygia and Pisidia, and e. by Pamphylia. The most ancient inhabitants are said to have been two Semitic races, *Solymi* and *Termilæ,* the former of whom were driven from the coast to the mountains in the n. by adventurers from Crete, under command of Sarpedon, brother of Minos, who first gave the country the name of Lycia. To what race the invaders belonged is not certain; they were not of Hellenic origin. The Lycians are prominent in the Homeric legend of the Trojan war. Lycia shared the vicissitudes of the other states of Asia Minor, becoming subject to the Persian and Syrian monarchies.

and then to Rome. During its independence, it consisted of 23 confederate cities, of which the principal were Xanthus, Patara, Pinara, Olympus, Myra, and Tlos; and at the head of the whole confederation was a president or governor called the Lyciarch. Many monuments and ruined buildings (temples, tombs, theatres, etc.), exquisite sculptures, coins, and other antiquities, testify to the attainments of the Lycians in civilization and the arts, in which they rivalled the Greeks themselves. These antiquities have been assiduously explored and studied since 1840. A beautiful collection of Lycian sculptures, made by Sir Charles Fellows, is in the British Museum. The most interesting of all the antiquities of Lycia are the inscriptions in which a peculiar alphabet is used, nearly allied to the Phrygian, and whose language appears to be an Indo-Germanic language mingled with Semitic words. Grotefend, Sharpe, Daniell, and others have spent much labor in deciphering these inscriptions.

LYCOPER'DON. See PUFF-BALL.

LYCOPODIACEÆ, n. plu. *lī'kō-pō-dī-ā'sē-ē* [new L. *lycopōdĭŭm*, club-moss—from Gr. *lukos*, a wolf; *poda*, a foot]: natural order of acrogenous or cryptogamous (flowerless) plants, somewhat resembling mosses but of higher organization, and by many botanists included among ferns as a sub-order. They have creeping stems and imbricated leaves. The axis consists entirely, or in great part, of annular vessels; the leaves are narrow and 1-nerved. The *thecæ*, or spore-cases, are axillary, sessile, 1 to 3-celled, opening by valves, or not at all, and often of two kinds, one containing minute powdery matter, the other sporules much larger, capable of germinating. The powdery particles have by some been regarded as *antheridia* (see ANTHERIDIUM), but their nature is uncertain.—The lycopodiaceæ are most abundant in hot, humid situations, especially in tropical islands, though some are found in very cold climates. About 200 species are known.—The two chief genera are *Lycopodium* and *Selaginella*. The common CLUB-MOSS (*L. clavatum*) creeps on the ground in heathy pastures, with branching stems, often many ft. long. A decoction of this plant is employed by the Poles to cure that frightful disease the *plica polonica*. The stems and leaves of *L. clavatum* are emetic, those of *L. Selago* cathartic; a S. American species, *L. cathartieum*, is violently purgative, and is administered in cases of elephantiasis. *L. Selago* is employed by the Swedes to destroy lice on swine and other animals. *L. alpinum* is used in Iceland for dyeing woolen cloth yellow, the cloth being simply boiled with a quantity of the plant and a few leaves of the bog whortleberry. *L. complanatum* is used for the same purpose in Lapland, with birch-leaves.—Many of the lycopodiaceæ are very beautiful, and are cultivated in hothouses, greenhouses, and fern-cases, in which they grow luxuriantly.

Ly'copodia'ceous, a. *-ā'shŭs*, pertaining to the **Lycopodiaceæ**. Lycopodium, n. *lī'kō-pō'dĭ-ŭm*, a genus of moss-like plants; club-moss; its fine yellow dust or seed. Lycopodites, n. plu. *lī-kŏp'ō-dīts*, fossil plants apparently allied to the club-mosses of the present day.

LYCOTROPAL, a. *lī-kŏt'rō-păl* [Gr. *lukos*, the knocker of a door; *tropos*, a turning]: in *bot.*, an orthotropal ovule curved like a horse-shoe.

LYCURGUS, *lī-kėr'gŭs:* celebrated Spartan law-giver, whose history and legislation are involved in so much obscurity that many modern critics have suspected them to be mythical. The account usually given is as follows: Lycurgus, who lived about B.C. 880 (or, according to others, about B.C. 1100), was descended from the old Doric family of the Proclidæ. His brother, Polydectes, King of Sparta, died, leaving his widow with child. This ambitious woman proposed to Lycurgus that he should marry her, in event of which she promised to destroy the fruit of her womb. Lycurgus was shocked, but feigned consent in order to save his brother's offspring. As soon as the child, named Charilaus, was born, Lycurgus proclaimed him king, and became his guardian. At this time, Sparta is represented as being in great disorder and demoralization—the different sections of the community quarrelling for political supremacy. Lycurgus after some years left his native country, and travelled through many foreign lands—Crete, Asia Minor, India, Egypt, Libya, Iberia—examining and comparing the political constitutions of the different countries, and finally returned to Sparta, full of knowledge fitting him to become one of the greatest legislators in the world. During his absence, things had grown much worse in Sparta, and he had no sooner arrived than the entire community requested him to draw up a constitution for them. To this he consented, and having induced them to solemnly swear that they would make no change in his laws till he came back, he again left Sparta, and was never more heard of. By this mysterious self-expatriation, he hoped to make the Spartan constitution eternal. The people now deemed him a god; a temple was erected in his honor, and annual sacrifices were ever afterward offered to him. No critical scholar considers such a biography historical; the most that can be assumed as probable is, that a certain Lycurgus existed, who at some critical juncture in Spartan affairs was selected to draw up a code of laws for the better government of the state. To represent the entire legislation of Sparta as invented by Lycurgus, and imposed upon the people as a novelty, is incredible; the only theory worth consideration is that which supposes him to have collected, modified, improved, and enlarged the previously existing institutions of Sparta (q.v.).

LYCURGUS: one of the ten Attic orators: b. Athens, 396 B.C.; d. there, 325 B.C. He was a pupil of Plato and

of Isocrates. In 343, he was sent with Demosthenes on an embassy to counteract the intrigues of Philip. He won his chief glory as guardian of the public revenue 338-326 B.C. The decree of the Athenians commending his administration of this trust (307 B.C.) is still extant. He was also appointed superintendent of the city, and censor, and in the latter capacity caused his own wife to be fined for violating one of his sumptuary enactments. Of the prosecutions which he conducted, the most celebrated was that against Lysicles, who had commanded the army of Athens at Chæronea; Lysicles was condemned to death. There were 15 orations of his extant in the ages of Plutarch and Photius, but all have since perished except that against Leocrates, and some fragments.

LY'DEKKER, RICHARD, B.A., F.R.S., F.G.S., F.Z.S.: English naturalist: b. 1849. He was educated at Cambridge University and was a member of the staff of the Geological Survey of India 1874-82. He prepared for the British Museum in 1884 a catalogue of the fossil mammalia, reptilia and birds therein, and was in Argentina, 1893-4, to examine the mammals in the La Plata Museum. Among his numerous publications are: *Phases of Animal Life; Geological History of Mammals; The Deer of All Lands* (1898); *Wild Oxen, Sheep, and Goats of All Lands, Living and Extinct* (1898); *Descriptions of South American Fossil Animals; Mostly Mammals;* etc.

LYD'DITE: a high explosive which was adopted by the English government in 1888 for charging its torpedo-shells. Its composition has been varied from time to time, but a typical formula is picric acid, 88 per cent.; dinitrobenzene, 8 per cent., and vaseline, 4 per cent. These materials are melted and mixed together in a water-bath, and while in the fused condition they are poured into the shells, where, on cooling, they solidify to a stone-like mass. A central canal is left in the explosive charge in which is placed a detonator containing ammonium picrate by which the charge is exploded. This explosive was practically tested in the Boer war and the results were very disappointing. It is, however, still believed to be an efficient explosive for use against armor. The explosive owes its name to the fact that the first experiments made with it were carried on in the environs of the village of Lydd in England.

LYDIA, *lĭd'ĭ-a:* anciently, country in Asia Minor, bounded w. by Ionia, s. by Caria, e. by Phrygia, and n. by Mysia. It is said to have been inhabited originally by a people called Mæonians (whether of Semitic or Indo-Pelasgic origin is disputed by modern ethnographers), who were subdued or expelled by the Lydians (about B.C. 720), a Carian race. The country was mountainous in the s. and w.—the principal range being that of Tmolus. It was famed for fruitful soil, and mineral wealth, particularly for the gold of the river Pactolus

and of the neighboring mines; but it was infamous for the corruption of morals among its inhabitants, especially in Sardis (q.v.), its capital. Lydia attained its highest prosperity under the dynasty of the Mermnadæ (abt. B.C. 700-546). The first of this dynasty was the half-mythical Gyges (q.v.)—the last was the famous Crœsus (q.v.), noted for prodigious wealth. The subsequent history of Lydia is unimportant. Its antiquities have not been adequately explored. Compare Niebuhr's *Lectures on Ancient History;* Hamilton's *Researches,* and investigations by Dennis, Ramsay, and Sayce.

LYDIAN, a. *lĭd'ĭ-ăn* [L. *Lydia;* Gr. *Ludia,* an anc. kingdom of Asia Minor]: pertaining to Lydia or its inhabitants; soft and slow in music; effeminate; soft. LYDIAN STONE, compact variety of flinty slate, though less hard than common flinty slate, and not of slaty structure; of velvet-black color, with a flat-conchoidal fracture and keen cutting grain; long used as a touchstone for gold, whose purity is shown by the color of the streak left on its smoothed surface. It is found in many countries, though obtained first in Lydia.

LYD'IAN MODE: one of the ancient Greek authentic modes in music; retained as one of the old church modes, the notes being F, G, A, B, C, D, E, F, the same as in the modern diatonic scale. Since the Reformation, the melodies in the Lydian Mode have entirely disappeared, and it is used only occasionally in modulation from other modes.

LYE, n. *lī* [F. *lie,* dregs: L. *lix;* Ger. *lauge,* lye-ashes: Lap. *ligge,* mud: Bohem. *lauh,* lye: Gael. *lauth,* ashes]: water impregnated with an alkaline salt, obtained by steeping wood-ashes in water; also spelled LEY, *lĭ.* The term sometimes denotes all solutions of salts, but usually solutions of the fixed alkalies, potash and soda, in water. The solutions of caustic potash and soda are called caustic lyes; those of their carbonates, mild lyes. The fluid which remains after a substance has been separated from its solution by crystallization is called the *Mother Lye.*

LYE, n. *lī* [from Eng. *lie,* to rest]: a short railway-siding on which carriages or wagons may rest for a time.

LYELL, *lī'ĕl,* Sir CHARLES, Baronet, LL.D., D.C.L.: eminent geologist: 1797, Nov. 14—1875, Feb. 22; b. Kinnordy, Forfarshire, Scotland; eldest son of Charles Lyell, botanist and literary writer. Lyell received his early education at Midhurst, Sussex, England; and was entered at Exeter College, Oxford, where he graduated B.A. 1819. The lectures of Buckland developed his taste for geology. He studied law, and was called to the bar; but as he did not need a profession for livelihood, he soon turned to geology, making geological tours 1824, 28-30, over various parts of Europe, whose results were published in *Transactions of the Geological Soc.* and elsewhere. The first volume of his great work, *The Principles of Geology,* ap-

peared 1830, the third 1833. This work, next after Darwin's *Origin of Species*, has most powerfully influenced the direction of scientific thought in the 19th c. It broke down the belief in the necessity of stupendous convulsions in past times; and taught that the greatest geological changes might be produced by the forces still at work on the earth. It was subsequently divided into two parts, published as two distinct works—*The Principles of Geology; or the Modern Changes of the Earth and its Inhabitants* (12th ed. 1876); and *The Elements of Geology; or the Ancient Changes of the Earth and its Inhabitants.* —*The Geological Evidences of the Antiquity of Man* (1863) startled the public by its advocacy of Darwin's theory in *Origin of Species.* Lyell published also *Travels in N. America* (1845), and *A Second Visit to the United States* (1849). During the second sojourn he estimated the recession of the rock at Niagara, and the amount of deposition of alluvium at the delta of the Mississippi; and visited Nova Scotia. He made many other geological excursions; and contributed important papers to *Transactions of the Geological Soc., Reports of the British Assoc.,* etc. By his thorough knowledge and application of the principles of geology as affecting Europe he was able to render vast service in elucidating N. American geology. On the opening of King's College 1832, Lyell was appointed professor of geology, but soon resigned. In 1836 and 50, he was elected president of the Geological Soc.; and 1864, president of the British Association. He was knighted 1848, and created a baronet 1864. Lyell received the degree of D.C.L. from Oxford, and that of LL.D. from Cambridge. See his *Life, Letters, and Journals* (1881); and Geikie, *The Founders of Geology* (1897).

LYENCEPHALA, n. plu. *lī'ĕn-sĕf'ă-lă* [Gr. *leios,* smooth; *engkeph'ălos,* the brain—from *kephălē,* the head]: one of Owen's primary divisions of mammals; implacentals.

LYGODIUM, *lī-gō'dĭ-ŭm:* genus of climbing ferns; including several species natives of warm countries. A N. American species, with fronds one to four ft. high, having a climbing growth upon other plants, is found in shaded or moist places, from Mass. as far south as Ky. It abounds in parts of the Connecticut river valley; and is a favorite, in either a fresh or dry state, for decorations.

LYING, n. *lī'ĭng* [from Eng. *lie,* a falsehood]: the habit or practice of telling lies: ADJ. addicted to falsehoods; deceptive. LY'INGLY, ad. *lĭ.*

LYING, imp. *lī'ĭng* [Eng. *lie,* to recline]: reclining, being prostrate: N. position of one who lies down. LYING OFF, being out in the offing, as a ship. LYING TO, the state of a ship when the sails are so disposed as to retard or stop its progressive motion. LYING IN, confinement of women in childbed.

LYLY (or LILLY, or LYLIE), *lĭl'ĭ*, JOHN: English dramatist: 1553 or 4—1606, Nov. 20; b. Kent. He studied at Magdalen College, Oxford, and took his degree M.A. 1575. Of his career, nothing is known, except that he lived in London, and supported himself by his pen. Lyly wrote nine plays, mostly on classical subjects—as *Sappho and Phaon, Endymion, Midas, Galathea,* and the *Maid's Metamorphosis*—the lyrics of which frequently show a sweet and graceful fancy; but the two works which chiefly have perpetuated his name, are *Euphues, or the Anatomy of Wit,* and *Euphues and his England.* They are in prose, and are marked by great affectation, bombast, and pedantry in language and imagery; yet Lyly is said to have intended them for models of elegant English, and such the court of Elizabeth at least undoubtedly thought them. According to Lyly's editor, Edmund Blount, 'that beautie in court which could not parley euphuism, that is to say, who was unable to converse in that pure and reformed English which he had formed his work to be the standard of, was as little regarded as she which nowe there speakes not French.'

LYM, n. *lĭm* [see LIME-HOUND]: in *OE.*, a blood-hound.

LYMAN, *lī'man,* AZEL STORRS: American inventor: b. Potsdam, N. Y., 1815; d. 1885. He was graduated at the Illinois University and had intended to become a Presbyterian clergyman, but deafness prevented the fulfilment of this purpose. Removing to New York he prepared a historical chart subsequently adopted in many schools and colleges, and also contributed to scientific periodicals. His talents for invention having developed themselves he devised important systems of refrigeration, and a new process of ventilation. He also invented a fibre gun for disintegrating wood for paper pulp, which is extensively used, and among his later inventions is the multi-charge cannon known as the Lyman-Haskell gun.

LYMAN, BENJAMIN SMITH: American geologist and mining engineer: b. Northampton, Mass., 1835, Dec. 11. He was graduated at Harvard in 1855; taught for several years; in 1859-61 studied at Ecole des Mines, Paris, and then spent a year at the Mining Academy in Freiberg, Germany. In 1858 he became assistant State geologist of Iowa, and in 1870 was employed by the government of India in surveying oil fields. From 1873 to 1879 he was chief geologist and mining engineer to the Japanese government, and served as assistant State geologist of Pennsylvania, 1877-95. His geological researches have taken him over an unusually wide area of the globe. He has published more than 130 reports and papers on geological subjects, surveying, etc., among which may be mentioned his *Preliminary Report on the First Season's Work of the Geological Survey of Yesso* (1874);

A General Report on the Geology of Yesso (1877); *A General Report on the Punjaub Oil Lands* (1878); and *Geological Survey of Japan.*

LYMAN, Chester Smith: 1814, Jan. 13—1890, Jan. 29; b. Manchester, Conn.: educator. When 15 years old he began computing almanacs, and prepared tables of eclipses for 15 years ahead. He graduated at Yale 1837, studied in Union and Yale Theol. Seminaries, was pastor of a Congl. Church in New Britain, Conn., 1843-45, had charge of the royal school in Honolulu and explored the Kilauea volcano 1846-7, was a surveyor in Cal. 1847-50, and revised the scientific terms in Webster's Dictionary in New Haven 1850-64. In 1859 he was appointed prof. of industrial mechanics and physics in Yale, was active in organizing the Sheffield Scientific School, was prof. of astronomy and physics there 1871-84, and afterward was prof. of astronomy only. He made several useful scientific inventions and wrote numerous scientific papers, and was pres. of the Conn. Acad. of Arts and Sciences 1857-77, and an honorary member of the British Assoc. for the Advancement of Science.

LY'MAN, Henry: 1809, Nov. 23—1834, June 28; b. Northampton, Mass.: missionary. He graduated at Amherst College 1829 and at Andover Theol. Seminary 1832, was ordained the latter year, and sailed for the island of Sumatra 1833, as one of the first missionaries to the E. Indian archipelago by the A. B. C. F. M. Soon after beginning his work among the savage Battahs, he and his companion, the Rev. Samuel Munson, were murdered by the natives. This martyrdom in the early period of American Christian missions, so far from discouraging the work, drew public interest to missionary effort, showed its self-sacrificing spirit, and called forth new recruits. He published *Condition and Character of Females in Pagan and Mohammedan Countries* (Boston 1832).

LYMAN, Joseph Bardwell: American agriculturist: b. Chester, Mass., 1829, Oct. 6; d. Richmond Hill, L. I., 1872, Jan. 28. In 1867 he became agricultural editor of the New York *World,* was editor of *Hearth and Home* in 1868, and later joined the staff of the *Tribune.* With his wife he wrote *The Philosophy of Housekeeping* (1867). He published *Resources of the Pacific States* (1865); *Women of the War* (1866); *Cotton Culture* (1867).

LYMAN, Phineas: American soldier: b. Durham, Conn., about 1716; d. West Florida, now Mississippi, near Natchez, 1774, Sept. 10. He was graduated at Yale in 1738, and subsequently practiced law in Suffield. In 1755, being commander-in-chief of the Connecticut militia, he served with Sir William Johnson at the battle of Lake George, and, after his commander had been disabled, conducted the engagement to a prosperous con-

clusion. He was present at the attack upon Ticonderoga by Abercrombie, and at the capture of Crown Point and the surrender of Montreal; and in 1762 commanded the provincial troops in the expedition against Havana. Subsequently he passed many years in England in efforts to procure a grant of land on the Mississippi for the purpose of establishing a colony, and in 1775 embarked with his eldest son and some others for the country in question. The emigrants who followed him encountered many misfortunes, and after the subjugation of the country by the Spaniards in 1781-2 were obliged to take refuge in Savannah.

LYMAN, THEODORE: American philanthropist: b. Boston, 1792, Feb. 20; d. Brookline, Mass., 1849, July 18. He was graduated from Harvard in 1810, studied at the University of Edinburgh in 1812-14, was for a time aide-de-camp to the governor of Massachusetts, in 1823-7 commanded the Boston brigade of the State militia with rank of brigadier-general, was a representative in the State legislature in 1821-4 and 1825, and State senator in 1824. In 1834-5 he was mayor of Boston; and on Oct. 21, 1835, at the risk of his own life, rescued William Lloyd Garrison from the gentlemanly mob that had vowed to bring the Abolitionist to the tar kettle before dark. From 1835 he devoted himself to philanthropic work, and in 1844 removed to Brookline, Mass. In 1840-6 he was president of the Boston Farm School. To this institution he gave $10,000; to the Massachusetts Horticultural Society, of which he was a life member, $10,000; and to the State reform school, now the Lyman school, at Westboro, $72,500. He wrote: *Three Weeks in Paris* (1814); *The Political State of Italy* (1820); *The Hartford Convention* (1823); *The Diplomacy of the United States with Foreign Nations* (1828).

LYMAN, THEODORE: American naturalist: b. Waltham, Mass., 1833, Aug. 23; d. Nahant, Mass., 1897, Sept. 9. He was a son of Theodore Lyman (1792-1849) (q.v.). He was graduated from Harvard in 1855, from the Lawrence Scientific School in 1858, and was assistant in zoology at the Museum of Comparative Zoology. In 1863-5 was volunteer aide on the staff of General Meade, with rank of lieutenant-colonel. Having been mustered out on April 20, 1865, he was fish commissioner for Massachusetts in 1865-82, and in that capacity made the first experiments undertaken by any State of the Union for the cultivation and protection of food fishes. In 1883-5 he served in Congress as an Independent representative. He was also president of the Boston Farm School, a member of the National Academy of Sciences (from 1872), and a trustee of the Peabody education fund. He donated $10,000 to Harvard and his library of scientific works to the Museum of Comparative Zoology. Among his publications are: *Illustrated Catalogue of the Ophiuridæ and*

Astrophytidæ in the Museum of Comparative Zoology (1865), with a *Supplement* (1871); *Old and New Ophiuridæ and Astrophytidæ* (1869); *Papers Relating to the Garrison Mob* (1870); *Prodrome of the Ophiuridæ and Astrophytidæ of the Challenger Expedition* (1878-9); and *Report on the Ophiuridæ Dredged by H. M. S. Challenger During the Years 1873-6* (1882).

LYME GRASS, *līm* (*Elymus*): genus of grasses, the species of which are natives of the temperate and colder regions of the n. hemisphere. The spikelets grow in pairs from the joints of the *rachis*, and each has 2-4 fertile florets, and two awnless glumes, both on the same side.—The SEA LYME GRASS (*E. arenarius*) is frequent on sandy shores. It is a coarse, grayish grass, often three or four ft. high, with spiny-pointed leaves and upright close spikes; a perennial with creeping roots, very useful in binding the sand. On this account, it is much sown on the shores of Holland. In Iceland and some other countries, it is used for thatch. The seed, which is large, is collected in Iceland, and ground into meal, which is made either into porridge or into soft thin cakes, and esteemed a delicacy.—A closely allied species or a variety, GIANT LYME GRASS (*E. giganteus*), is often sown in Holland, being preferred for its more vigorous growth.—Various expedients are adopted to secure the growth of lyme grass seeds in very loose sands, as the laying down of pieces of turf, a gradual advancement from the margin of the sand, etc.

LYMPH, n. *limf* [F. *lymphe*, lymph, sap—from L. *lympha*, water over which a nymph presides]: nearly colorless fluid in animal bodies, found in the vessels called Lymphatics (q.v.). It has a rather saltish taste, and an alkaline reaction. It coagulates shortly after its removal from the living body, and forms a jelly-like, semi-solid mass, which continues for some time to contract, so that at last the clot is very small, in proportion to the expressed serum. On microscopic examination, the lymph is seen to contain corpuscles resembling one variety of white blood corpuscles, granules, fat globules, and occasionally blood corpuscles. The chemical constituents of lymph seem to be the same as those of blood, excepting the substance peculiar to the red corpuscles. The uses of this fluid are twofold: first to convey from the tissues to the blood effete matters, to be afterward excreted by the skin, lungs, and kidneys; secondly, to convey from the blood to the tissues material needed for their nutrition. The lymph coming from the intestines charged with the products of digestion, is called chyle. (See DIGESTION.) LYMPHATIC, a. *limfăt'ik*, pertaining to lymph. LYMPHAT'ICS, n. plu. *-iks*, the minute vessels which carry lymph to all parts of the body (see below). LYMPHY, a. *lim'fi*, containing or resembling lymph.

LYMPHANGITIS: an inflammation of the lymphatic vessels of the skin and subcutaneous tissues, originating

usually from a wound into which some septic material has penetrated. The wound may be very slight, the mere prick of a needle, or there may be no discernible wound at all; it is probable, however, that there is always some minute scratch or abrasion present, even if it is not apparent. The inflammation that is thus set up in the lymphatics always extends upwards from the wound, and may be traced by lines of redness following the course of these vessels, and terminating where the inflamed vessels enter a gland. In the arm, for example, they never pass the armpit, in which the axillary glands lie. The tenderness along these inflamed tracts is excessive, and extends to the next gland, which appears to arrest the further progress of the poisoned lymph, becoming itself inflamed. The degree of inflammation of the gland may vary from slight enlargement with tenderness on pressure, to profuse suppuration. The constitutional symptoms attending an attack of acute inflammation of the lymphatic vessels are often severe, including rigors, nausea, heat of skin, thirst, dryness and coating of tongue, with constipation, sleeplessness, and languor. The treatment of this affection consists in thorough cleansing of the wound, incising it freely if all its parts are not freely exposed, and washing it copiously with water which has been sterilized by long boiling. The wound may then be covered with a light antiseptic dressing. Constitutional treatment is also called for. The condition is one which may be so serious in its consequences, death from blood-poisoning being not infrequent, that it should be under the physician's care from the first moment that the red lines indicating beginning of inflammation of the lymphatics are noticed.

LYMPHAT'ICS: vessels in the body, containing the Lymph, called also *absorbents,* from the property which these vessels possess of absorbing foreign matters into the system and carrying them into the circulation. The lymphatic system includes not only the lymphatic vessels and the glands through which they pass, but also the lacteals, which are nothing more than the lymphatics of the small intestine, and differ from other lymphatics only in conveying chyle instead of lymph during the latter part of the digestive process.

The lymphatics are minute, delicate, and transparent vessels, of approximately uniform size, and remarkable for their knotted appearance, due to the presence of numerous valves, and for their frequent dichotomous divisions. They are found in nearly every texture and organ of the body.

The lymphatics are arranged in a superficial and a deep set. The superficial vessels on the surface of the body lie immediately beneath the skin, and join the deep lymphatics in certain points through perforations of the deep fascia; while in the interior of the body they lie in the sub-mucous and sub-serous areolar tissue. They

arise in the form of a net-work, from which they pass to lymphatic glands or to a larger trunk. The deep lymphatics are larger than the superficial, and accompany the deep blood-vessels; their mode of origin is not known. The structure of the lymphatics is similar to that of veins and arteries.

The lymphatic glands are small, solid, glandular bodies, varying from the size of a hemp-seed to that of an almond, situated in the course of the lymphatic vessels. They are found in the neck (where they often become enlarged and inflamed, especially in scrofulous subjects), in the axilla, or arm-pit, in the groin (where when inflamed they give rise to the condition known as *Bubo*), and in the ham; while deep ones are found abundantly in the abdomen and the chest.

The lymph of the left side of the trunk, of both legs, of the left arm, and the whole of the chyle, is conveyed into the blood by the Thoracic Duct (q.v.); while the lymph of the right side of the head, neck, and trunk, and of the right arm, enters the circulation at the junction of the axillary and internal jugular veins on the right side, by a trunk, guarded at its opening by valves.

LYNCEAN, a. *lĭn-sē'ăn* [L. *lyncēŭs*, sharp-sighted, as the lynx—from *lynx* or *lyncem*, a lynx]: pertaining to the lynx; sharp-sighted.

LYNCH, v. *lĭnch* [after a man named *Lynch* (see LYNCH LAW)]: to inflict pain or punishment without the forms of law, as by a mob. LYNCH'ING, imp. LYNCHED, pp. *lĭnsht*. LYNCH LAW, popular vengeance inflicted by a mob; mob-law. JUDGE LYNCH, slang term of personification for the act of lynching.

LYNCH, ANNE CHARLOTTE. See BOTTA, ANNE CHARLOTTE.

LYNCH, ARTHUR: Irish journalist and author: b. Smythesdale, Ballarat, Victoria, Australia, 1861. He was educated at Melbourne University and the University of Berlin, practiced as an engineer, lectured on engineering and scientific subjects at Melbourne, was for a time a journalist in London, was a war correspondent in Ashanti, and twice visited America. During the second Boer war he was colonel in the Irish brigade No. 2 of the Transvaal forces; and upon his landing in Great Britain subsequent to the war was brought to trial for high treason. He was sentenced to death; but this sentence was afterward commuted to life imprisonment. Lynch was elected M. P. for Galway in 1901. Among his books are: *Modern Authors* (1891); *Approaches* (1892); *Our Poets* (1895); *Religio Athletæ* (1895); *Human Documents* (1896).

LYNCH, CHARLES: American planter and soldier: b. 1736; d. 1796. He lived on the Staunton river in Virginia, and in support of the revolutionary government in that region during the early part of the war with Great

Britain, joined Robert Adams and Thomas Calloway in the punishment and exile of Tories. A frequent method, so says tradition, was to suspend the disaffected by their thumbs until they were willing to exclaim 'Liberty forever!' The summary acts of this self-appointed court are generally accepted as the origin of the term lynch-law (from 'Lynch's Law'). But whereas the expression is now used almost exclusively of punishment by death without legal authority, it does not appear that Lynch ever exacted the death penalty.

LYNCH, GEORGE: English author and journalist: b. Cork, Ireland, 1868, March 27. He went on exploring expeditions in Western Australia and in the Pacific islands; in 1898 he was war correspondent for the London *Daily Chronicle* in the Spanish-American War. He then went to Africa as correspondent for the *Illustrated London News* during the Boer war, and was wounded at the battle of Reitfontein. He was at Ladysmith during the first part of the siege, and, on attempting to go from there to join General Buller's forces, was captured by the Boers and kept a prisoner for a month. Shortly after obtaining his freedom he returned to England. He was war correspondent for the *Daily Express* and the *Sphere* in the China campaign for the relief of Peking, and later visited southern China and Japan. He was correspondent for the New York *Journal* in Macedonia in 1903, and for the London *Daily Chronicle* in Manchuria during the Russo-Japanese war 1904-5, and was in St. Petersburg during the disturbances of 1905. He has also been special correspondent for the London *Daily Mail* in the United States. He has written *The War of the Civilizations; Realities; The Bare Truth About War and Other Things; Impressions of a War Correspondent; From Pekin to Piccadilly; The Path of Empire;* etc.

LYNCH, HANNAH: English novelist: d. 1904, January. She was the Paris correspondent of *The Academy* and published *Prince of the Glades; George Meredith: a Study; Dr. Vermont's Fantasy; An Odd Experiment; Toledo* in *Mediæval Towns* series; *French Life in Town and Country; Autobiography of a Child;* etc. She also translated the dramas of Echegaray (q.v.) into English.

LYNCH, JOHN JOSEPH: Canadian Roman Catholic prelate: b. Ireland 1816. He was educated at Dublin and Paris, and ordained to the priesthood in 1843. Three years later he came to the United States, was first engaged in missionary work at Houston, Tex., and then became president of the Lazarist College of Saint Mary the Barren in Missouri. He next went to Canada, where he founded the Seminary of Our Lady of Angels, and in 1860 was appointed bishop of Toronto. He was later made archbishop of Toronto and Metropolitan of Ontario; in 1869 he was a member of the Vatican Council.

LYNCH, PATRICIO: Chilean naval and military officer:

b. Santiago, Chile, 1824; d. at sea 1886, May. He was educated at the Chilean Naval Academy; entered the English navy in 1840 and took part in the Anglo-Chinese War; in 1847 he re-entered the Chilean navy and served during the war against Spain. In 1879-80 he commanded a military and naval expedition against Peru, and ravaged the northern part of that state, destroying a large amount of property. He also took part in the attack against Lima, and was made commander-in-chief of the Chilean army; in the city of Lima he strictly observed martial law, suppressed the Peruvian government, and took Calderon, the provisional president, prisoner, though this act called forth a protest from the United States minister. In 1883 he evacuated the city, having placed Iglesias at the head of affairs. He was made vice-admiral of the navy, and in 1884 sent as minister to Spain. He died on his homeward voyage two years later.

LYNCH, Thomas, Jr.: American patriot, one of the signers of the Declaration of Independence: b. Prince George's parish, S. C., 1749, Aug. 5; perished at sea in the latter part of 1779. He was educated at Eton and the University of Cambridge, and was subsequently admitted a student in the Temple, London. In 1772 he returned to South Carolina, and at the outbreak of hostilities in 1775 was appointed a captain in the first regiment of provincial regulars raised by South Carolina. Being unanimously chosen by the provincial assembly to succeed his father as a member of Congress, he took his seat in that body in 1776, but in a few months was compelled by ill health to retire from active political life. One of his last public acts was to affix his signature to the Declaration of Independence. In the latter part of 1779, as the only means of saving his life, he sailed for St. Eustatius, West Indies, intending to find there a neutral vessel which would convey him to France. The ship in which he sailed was never heard from and is supposed to have been lost in a storm.

LYNCHBURG, *lĭnch'bĕrg*: city in Campbell co., Va., on the James river, and on the Norfolk & Western, the Southern, and the Chesapeake & Ohio railroads; about 125 miles west by south of Richmond. The city is situated in a river valley which forms a pass through the mountains. The irregularity of the surface upon which stands the city, the hills, the numerous terraces, the many trees along the streets, the well-built, handsome houses with neatly kept grounds, all make the place most attractive. Lynchburg was founded in 1786 by John Lynch, but it was not incorporated until 1823. It was early in the 19th century, as now, a distributing center for places above on the river, and for many settlements and towns south of the James. The Confederates used it as a supply depot during the Civil war. On June 18, 1864, Gen. Hunter, of the Federal army, attacked the city, but was defeated.

The chief manufactures are iron and brass products, tobacco, cotton goods, plows, wagons, shoes, dyes, bark extract, hardware, flour, and lumber. It has extensive tobacco interests, as a manufacturing and jobbing center being among the seven leading shoe jobbing centers of the Union. The trade is principally in tobacco, raw and manufactured; coal, granite, and its own manufactures. Lynchburg is the seat of the Randolph-Macon Woman's College, and it has four hospitals, and the Miller Female Orphan Asylum. Granite quarries are near by, and large coal fields and iron ore are in the neighboring counties. The river furnishes extensive water power, which aids in the development of the manufacturing interests of the city. The government of the city is vested in a mayor, who holds office two years, and a council. The city treasurer, clerk of the courts, and commissioner of revenue are chosen by popular election, and the other officers are appointed. The waterworks plant is owned and operated by the city. Pop. (1910) 29,494.

LYNCH LAW: term used in the United States descriptive of the action of unofficial or unauthorized persons, organized bands, or mobs who seize persons charged with or suspected of crime, or take them out of the custody of the law and inflict summary punishment upon them without legal trial and without the warrant or authority of law. This barbarous mode of attempt at justice has always existed in every country in times of great popular excitement, and sometimes has been necessarily resorted to in countries newly settled, where the power of the civil government is not yet sufficiently established; though in the last class of cases the act is not precisely defined as lynch law. The name is derived by Webster from a farmer in Piedmont co., Va. (17th c.), who was wont to administer summary flogging to wrong-doers, and to whom his neighbors in lack of any near court of law, were accustomed to bring criminals for trial and punishment. A different derivation is found by some in the story of James Fitzstephen Lynch, mayor of Galway, Ireland, 1493, who, in the spirit of Brutus, with his own hands hanged his son from a window for murder on the high seas. Another derivation is from the AS. verb *linch,* to beat with a club.—Lynch law is rarely resorted to in the old and well-settled states; and is universally deprecated as a dangerous relic of barbarism. With frightful abuses, it has yet had some uses at critical times in the early history of California, and some other western states and territories. It is almost universally resorted to in some of the southern states for the punishment of negroes for assaults upon white women, and is justified as necessary to keep the negroes in subjection and to deter them from ravishing white women. Public opinion in the South so strongly approves lynch law in this class of crimes that the perpetrators are practically

exempt from punishment. As thus applied, its political bearings excite hot debate.

LYNDHURST, *lĭnd'hėrst* (John Singleton Copley), Lord: 1772, May 21—1863, Oct. 12; b. Boston, Mass.; son of John Singleton Copley (q.v.), (also b. Boston) who was painter of the *Death of Chatham,* and other esteemed works. The Copleys were originally an Irish family, the painter's grandfather having emigrated from the county of Limerick, and settled at Boston. While Lyndhurst was an infant, his father removed to England for the practice of his art. Lyndhurst was educated at Trinity College, Cambridge, where he was a fellow 1797. Called to the bar at Lincoln's Inn 1804, he chose the Midland Circuit, and soon obtained briefs. In politics, he was at first liberal, and long expressed sentiments hostile to the ministry of the day. He ably defended Watson and Thistlewood on their trial for high treason 1817, and obtained their acquittal. Some surprise was therefore expressed when, 1818, he entered parliament for a government borough. In 1819, he became solicitor-general in the Liverpool administration, and 1823 was promoted to attorney-general. It was much to his credit that, unlike his predecessors, he instituted no *ex officio* informations against the press. In 1826, he became master of the rolls. When Canning was charged to form a ministry 1827, he offered the great seal to Lyndhurst (then Sir John Copley), who was raised to the upper house, and remained lord chancellor 1827-30. In 1831, he became lord chief baron of the exchequer, which office he exchanged for the woolsack during the brief administration of Sir R. Peel 1834. In 1835, he led the opposition to the Melbourne ministry in the upper house, in speeches of great power and brilliancy. Lyndhurst's orations and annual reviews of the session did much to reanimate the conservative party, and pave the way for their return to power 1841. He then became again lord chancellor, and held the great seal until the defeat of the Peel govt. 1846. After that time, he took little part in home politics; though his voice was often heard on matters of foreign policy, and in denunciation of tyranny in Italy and elsewhere. He died in London. Lyndhurst's high attainments as a lawyer have never been questioned, and his judgments—of which that in the great case of Small *v.* Attwood particularly may be cited—have never been excelled for clearness, method, and legal acumen. In the house of peers, he had few equals. When he was 88 years of age, he maintained, with great force and ability, the right of their lordships to reject the Paper Duties Bill. See *Life of Lyndhurst* by Sir Theodore Martin (1883).

LYNDSAY. See Lindsay.

LYNE, *līn,* Joseph Leycester: commonly known as 'Father Ignatius,' or 'Ignatius of Jesus': English

clergyman and author: b. London, England, 1837, Nov. 23. After taking deacon's orders, and doing some mission work in London, he conceived the idea of reviving the Benedictine rule in a modern monastic foundation. With this view he built Llanthony Abbey in Wales, where he was joined by a few enthusiasts, though his movement has made no progress at all commensurate with his programme. He is a striking preacher and has visited the United States as a missioner. Among his published works are: *The Catholic Church of England* (1864); *Brother Placidus* (1870); *Leonard Morris, or the Benedictine Monk* (1871); *Mission Sermons and Orations* (1886); *Tales of the Monastery.*

LYNN, *lĭn:* city, in Essex co., Mass.; on Massachusetts Bay, and on the Boston & Maine, the Boston, Revere Beach & Lynn railroads; about 10 m. n.e. of Boston and 5 m. s.w. of Salem. Area, nearly 12 sq.m. Lynn was first settled in 1629 by Edmund and Francis Ingalls and for a time was called Saugus. It was incorporated in 1630 and chartered as a city in 1850. The city includes what were several independent villages: Glenmere, Highlands, East Lynn, West Lynn, Linwood, Lynmere, and Wyoma. The Lynn harbor is shallow, but it is considered safe. The 3 m. shore line adds to its attractions. The city is noted for its shoe factories. The annual amount of shoe business is $40,000,000; and the number of persons employed, 25,000. The General Electric Company's annual business amounts to over $40,000,000, and the number of employes is about 20,000, over 6,000 of whom are in Lynn. The chief manufactures are shoes, cut leather, shoe machinery, electrical supplies, meters, arc lamps, morocco, and patent medicines. There are 11 banks, 5 national, 3 savings banks and 3 trust company banks. The national banks have resources of $7,379,923, capital of $800,000, surplus and profits of $1,020,725, and individual deposits of $4,715,738. The three savings banks have resources of over $12,200,000, and deposits of over $11,150,000. The three trust companies have combined resources of over $5,625,000, capital of $550,000, surplus of $425,000, and deposits of over $4,375,000. The city has the following churches: Methodist, 12; Baptist, 7; Congregationalist, 7; Roman Catholic, 4; Protestant Episcopal, 2; Universalist, 2; Friends, 2; Presbyterian, Adventist, Wesley Evangelical, Pentecostal, Swedish, Lutheran, and Hebrew, each one church.

Some of the principal buildings are Lynn Public Library, which has about 65,000 volumes; Lynn Hospital, the city hall, Lynn Home for Aged Women, and an orphanage. There are 2 high schools, 101 grammar schools, 120 primary schools, 4 large parish schools, containing primary, grammar and high school departments.

The annual expenditure for municipal maintenance and operation is about $1,348,000; the chief items are, schools, about $245,000; for poor, sick, homeless, and

other charities, $106,000; for police department, $84,500; for fire department, $96,000; for waterworks, $64,500; for city lighting, $56,000. The waterworks plant opened in 1870, and costing about $2,500,000, is owned and operated by the city.

The government is vested in a mayor, a board of aldermen (11 members), and a common council of 25 members, who are elected annually. The large majority of the people were born in the United States. Pop. (1900) 68,513; (1910) 89,336.

LYNX, n. *lĭngks* [L. *lynx*, a lynx (see LYNCEAN)]: a wild animal of the cat kind, noted for its keen sight. LYNX-EYED, having acute or keen sight. LYNX-SAPPHIRE, a lapidary's term for dark-gray or greenish-blue varieties of sapphire.

LYNX: name applied to several animals forming a section of the *Felidæ*; having a less elongated form than many others of that family, the body elevated at the haunches, long fur, a short tail, and the ears tipped with tufts or pencils of hairs. They are less courageous than other Felidæ of similar size, and prey on small quadrupeds and birds. In pursuit of birds, they climb trees. They are generally of sullen and suspicious temper, and not easily tamed. The name is now given to two forms of the cat tribe: 1. The Caracal (q.v.), probably the lynx of the ancients, inhabiting Africa, Syria, Arabia, Persia, and parts of India; 2. Several varieties found in n. and temperate regions of the E. and W. continents. Of the n. lynxes, the species or varieties are numerous, but their distinctions are vague, and even the question whether they are true species or only varieties of one species, is unsettled. The EUROPEAN LYNX (*L. virgatus*) is common in many parts of Europe and Asia, chiefly in mountainous and wooded districts. Its color is variable, but generally dark reddish gray, spotted with reddish brown, the belly whitish. It is about 3 ft. long. It is proverbial for acuteness of sight. It is hunted in winter for its fur, which is always in demand in the market; but many of the lynx skins imported from n. Asia belong probably to other species: those of N. America, probably also many of n. Europe and of Asia, are skins of the CANADA LYNX (*L. Canadensis* or *L. borealis*), generally of hoary-gray color with a broad space along the back blackish brown. It is rather larger than the European lynx and more clumsy in form.—The BAY LYNX (*L. Rufus*), called *Wild Cat*, is found in more southern parts of N. America, both in mountainous and in swampy districts, and often makes great havoc among poultry.

LYON, *lī'on*, DAVID GORDON, PH.D., D.D.: American Assyriologist: b. Benton, Ala., 1852, May 24. He was graduated from Howard College, Ala., and from the University of Leipsic in 1882, and since the latter date has been Hollis professor of divinity at Harvard. He

was recording secretary of the American Oriental Society, 1886-95, and corresponding secretary of the Society of Biblical Literature, 1894-9. He has published *Keilschrifttexte Sargons, König von Assyrien* (1883); *An Assyrian Manual* (1886).

LYON, MARY: founder of Mt. Holyoke Seminary (now College also) for girls: 1797, Feb. 28—1849, Mar. 5; b. Buckland, Mass. In her girlhood she was an eager student at Byfield, Mass., and elsewhere. She taught at Ashfield and Buckland; then assisted Miss Z. P. Grant in her school at Derry, N. H., and Ipswich, Mass. These young women made the Bible a regular text-book in their schools, and brought a direct and positive Christian influence to bear in all their training. About 1830 Miss Lyon was impressed with the need of new and more systematic appliances for education of young women, and she soon formed the project—startling in those days—of a permanent college for girls, 'with buildings, library, and apparatus, owned as colleges are, where successive generations of young ladies might be trained.' Finding this plan too large to be practical as a first step, this pioneer of higher education for American women devoted herself as with missionary zeal to founding, for girls with narrow financial resources, an institution of thorough education, in which not only economy, but also industry, independence, and practical efficiency should be subserved—the pupils sharing to considerable extent the daily domestic tasks of the common household. The novelty of the proposal, the general public indifference to the need which Miss Lyon desired to supply, the positive disapproval evoked in some quarters, were obstacles which Miss Lyon recognized and devoted herself to overcome. To her task she brought clearness of conviction, the courage of Christian faith, patience, unflagging work, and strong practical judgment. The needed money was raised; South Hadley, near Mt. Holyoke, was selected as the site, necessary buildings on a simple and economical scale were provided, and the school opened 1837. Her remaining 12 years of life were given to conducting it with great administrative talent as principal, and consolidating it for the future. In its gradual enlargement, its present high rank, and its world-wide work, it stands as her monument to generations to come. She sought to bring her own work and that of her assistant teachers into the domain of a joyful Christian self-sacrifice, with plain living and small pecuniary remuneration. In all her schools she taught about 3,000 pupils. She wrote the *Missionary Offering*, and *Tendencies of the Principles and System of the Mt. Holyoke Female Seminary*.—Pres. Hitchcock of Amherst College wrote her biography (pub. Northampton 1851; new ed. revised, New York 1858).

LY'ON, NATHANIEL: 1819, July 14—1861, Aug. 10; b. Ashford, Conn.: soldier. He graduated at the U. S. Milit. Acad. 1841; was assigned to the 2d U. S. infantry;

served in Seminole Indian war in Florida; promoted 1st lieut. 1847; took part in the Mexican war, was brevetted capt. for gallantry at Contreras and Churubusco, and wounded at the Belen Gate, Mexico City; was on Indian duty in California and Oregon 1848-53; promoted captain 1851; and served in Kansas and Missouri 1854-61, rendering valuable aid to the free-state party in Kansas 1854-56. Early in 1861 he began organizing and drilling home guards in St. Louis; Mar. 31 was placed in command of the U. S. arsenal and troops; May 10 captured the secession camp of state guards with a large amount of cannon, small arms, and ammunition; and May 17 was appointed brigadier-general of volunteers and placed in command of the department of the west. On June 17 he routed the state guards under Gen. Jackson at Booneville; Aug. 2 defeated the Confederates under Gen. McCulloch near Springfield; and Aug. 10, after being twice wounded in the battle on Wilson's creek, was shot dead while leading a charge. He bequeathed $30,000, nearly all his property, to the government to aid the prosecution of the war.

LYONS, *lī'onz*, or LYON, *lē-ong:* France, the capital of the department of the Rhone, 311 m. by rail s.e. of Paris, and 170 m. n. of Marseilles, is the second city of industrial importance, and the third in point of population in the country. It is situated at the confluence of the Saône and Rhône, the central business section being on the tongue of land that projects between the rivers to their junction, and extends northward to the hill of La Croix Rousse; while the ancient mediæval town is on the steep slopes of the Fourvières hill, rising from the w. bank of the Saône, and the modern industrial suburb of La Guillotière, with its numerous factories, is on the e. bank of the Rhône. Thirteen bridges span the Saône at this point, varying from 250 to 450 ft. wide, and nine bridges the Rhône, over 600 ft. wide. A series of detached forts crown different heights within a circuit of 43 m., making Lyons, with its extensive barracks and considerable garrison, a defensive position of great strategic importance. The older quarters of the town are crowded, dirty and unhealthful, with narrow, irregular streets, lined by tall, ungainly buildings. The best parts are the 13 m. of magnificent quays, built since the 18th c. as a protection against the periodical river floods, and now laid out with finely planted walks, stately mansions, municipal buildings, railroad depots, capacious warehouses, etc. Among the notable squares and open places are the Place des Terreaux, facing which stands the Hôtel de Ville, and the large and handsome Place Bellecour, the fashionable promenade. The chief public edifices are more remarkable for their antiquity than for the beauty of their architecture. The cathedral of St. John on the slope of the Fourvières, on the right bank of the Saône, is in the Gothic style of the 12th c., and

has four towers, two of which flank the w. front, while the other two, shorter but more massive, form the transepts. Higher up the slope is the modern church of Notre Dame, an imposing composite edifice occupying the site of the *Forum Vetus* built by Trajan. Beside it is a tower of Belvedere 680 ft. above the Saône. On the other side of the Fourvières is the church of St. Irenæus, the second bishop of Lyons. The church itself is an uninteresting modern structure, but it stands on the grave of the martyred bishop, and has beneath it the reputed crypt in which Polycarp preached, and 19,000 Christians at a later period were massacred by orders of Septimius Severus, 202 A.D. A little above the cathedral is the Palais de Justice, and lower down on the opposite bank of the Saône is the church of the Abbey of Ainay, beneath whose sacristy, and penetrating below the bed of the river, are dungeons without light or air, in which many of the early Christians were immured previous to martyrdom. Other noteworthy churches are the Church of St. Nizier, of the 14th c., one of the largest in the town; that of St. Bonaventure, the patron saint of Lyons; and the Church of the Chartreux, surmounted by a superb dome seen from all quarters of the city. The archiepiscopal palace, situated near the cathedral, is a large edifice of no architectural merit. The Hôtel de Ville is considered one of the finest edifices of the kind in France. It is an isolated square, and is surmounted by a dome 164 ft. high. The public library, occupying part of the buildings of the college on the Quai de Retz, is the best provincial collection in France. The Palais des Arts, facing the Place des Terreaux, is a fine majestic edifice. It contains a picture gallery, a cabinet of medals, a gallery for statues, and another for ancient stuccoes, a depot of mechanical inventions for the fabrication of silks, with a library attached; a free school of design, and a large hall used as the exchange.

The chief educational establishments are the college, or university, occupying a fine modern building and attended by over 2,000 students in the different faculties; the Martinière, a great school of science and the industrial arts with 500 students; a free Catholic university; various institutions of a special character, such as schools of chemistry and chemical industry, schools of design, of commerce, of weaving; a celebrated veterinary school, the botanic garden, etc. Charitable establishments are large and numerous. The most important are the Hôtel-Dieu, the Maison de la Charité, the Mont de Piété, occupying the Manécanterie or deanery attached to the cathedral; and the Hospice de l'Antiquaille, on the site of the ancient Roman palace or prætorium, now used partly as a lunatic and partly as a Magdalen asylum, and general penitentiary. There are several prisons—the New Prison, an extensive building, well arranged; the Maison des Recluses, now employed as a military prison;

and the prison of Roanne, regarded as a model in its kind.

As a manufacturing town Lyons early acquired and has long maintained a first place. It is the most important center of silk manufacture in the world, employing directly and indirectly over 200,000 persons. Other manufactures are hats, boots, jewelry, and liqueurs; besides dye works, foundries, glass houses, potteries, tanneries, breweries, and chemical works. Lyons is admirably situated for trade, on two navigable rivers, which make it a great entrepot both for the north and the south. It forms the common center where the highways and railroads from Paris, Marseilles, Bordeaux, from Switzerland, and Italy, all meet; it communicates with the Rhine by the Rhône and Rhine canal, while several other canals, branching off from its rivers, give it ample means of transport over a great part of the interior of the country. The chief imports are raw silk, wine, brandy, oil, soap, flax, hemp, rice, salt, cotton, wool, coffee, dyes, earthenware, and timber; and the exports, spun silk and silk goods, ribbons, hats, straw bonnets, woolens, flannels, linens, corn, flour, chestnuts, liqueurs, paper, hemp, ironware, etc.

As Lugdunum, Lyons was an early Gallic town, and when Cæsar invaded Gaul was a place of some importance; it figures more or less in the subsequent history of the Roman Empire, several emperors in succession making it their occasional residence and vying with each other in adorning it. It early received Christianity, and toward the end of the 2d c. numbered thousands of Christians among its inhabitants. Its first bishop, Pothinus, died a martyr in 197, and his successor Irenæus died also a martyr in 202. Lyons was afterward sacked by the Huns and Visigoths, who destroyed many of its noblest Roman structures. In the 8th c. it fell for a time into the hands of an army of Saracens from Spain, and suffered severely; but recovered its prosperity under Charlemagne, on the dissolution of whose empire it became the capital of the kingdom of Provence. Subsequently it fell under ecclesiastical domination, and was long governed by a succession of archbishops. In 1312 Lyons was annexed to the crown of France. It owes its new quays and several of its finest edifices to Louis XIV. The revolution of 1793 occasioned fearful reverses. The inhabitants, finding their industry paralyzed and their trade destroyed, rebelled against revolutionary violence, and the convention let loose its forces upon them; wholesale butcheries for many days deluged the town with blood. Since that period questions of an economical, or rather socialist nature, culminated in the sanguinary revolts of 1831, 1834, 1849 and 1871. Several important figures in history were natives of Lyons, among them the Roman emperors Marcus Aurelius, Claudius, and Caracalla, and the celebrated general Germanicus. Pop. (1901) 459,099.

LYONS: formerly an independent city of Clinton co., Ia., but incorporated with the city of Clinton in 1895. See CLINTON.

LYONS: city, county seat of Rice co., Kan.; on the Atchison, Topeka & Santa Fe, the Missouri Pacific, the St. Louis & San Francisco railroads; about 180 m. w. by s. of Topeka and 25 m. n. by w. of Hutchinson. It is situated in a fertile agricultural region in which stock raising is a prominent industry. Nearby are salt deposits, like that at Hutchinson in Reno co., a remarkably fine salt, obtained from a considerable depth below the surface. Some of its industrial establishments are salt works, grain elevators, gas engine works, and flour mills. Its trade is chiefly in grain, salt, live stock, flour, and corn. The city owns and operates the waterworks. Pop. (1900) 1,736. 2,000.

LYONS: village, county seat of Wayne co., N. Y.; on the Erie canal, and on the West Shore and the New York Central & Hudson River railroads; about 40 m. e. by s. of Rochester. Lyons was founded in 1795 and incorporated as a village in 1854. It is situated in a fertile agricultural region, and its extensive water power has contributed to its development as a manufacturing village. Its chief manufacturing establishments are a beet sugar factory, barrel factory, distilleries of peppermint oil, a pottery, and machine shops. Slipper soles and silverware are also manufactured. The Union School Library has about 4,000 volumes. Pop. (1910) 4,460.

LYONS, COUNCILS OF: two synods held at the city in France from which they derive their name and considered ecumenical by the Roman Catholic church. When the quarrel between the Emperor Frederick II and Innocent IV had resulted in the banishment of the latter from Rome, the pope summoned a council in 1245 at which the patriarchs of Aquileia, Antioch and Constantinople, as well as the Emperor Baldwin II, were present with several royal delegates. Thaddæus of Susa represented Baldwin, who was, in spite of that delegate's emphatic protests, solemnly deposed, and his subjects released from their allegiance. When Gregory X took the tiara, his first step was to attempt a reunion of Christendom, as represented by the Greek and Latin churches, which had been parted by schism mainly on the question of the *filioque* and Latin accretions to the doctrine of purgatory. The second council of Lyons met 1274 under his presidency and the desired union was apparently effected, for both Greek and Latin prelates sang the creed including the clause asserting the double procession. The tie that bound them, however, proved a rope of sand, and the schism has continued to this day. See GREEK CHURCH.

LY'ONS, GULF OF: portion of the Mediterranean indenting s.e. France, bordered also by Catalonia in Spain as far s. as Cape San Sebastian; about 140 m. wide at its

opening, and extending about 80 m. into the land. The chief rivers emptying into it are the Rhone, Hérault, and Aude. It is said to have its name from the lion on account of its furious storms.

LYPEMANIA, n. *lī-pĕ-mā′nĭ-a* [F. *lypémanie*—from Gr. *lupē*, a pain of mind, grief; *mania*, madness]: in *men. path.*, the melancholia of the ancients. The term was introduced by Esquirol to signify disorder of the faculties with respect to one or a small number of objects, with predominance of a sorrowful and depressing passion.

LYRATE, a. *lī′rāt*, or LY′RATED, a. *-rāt-ĕd* [L. *lyra*, a lyre]: in *bot.*, applied to a leaf having a large terminal lobe, and several pairs of smaller lobes, decreasing in size toward the base.

LYRE, n. *līr* [F. *lyre*—from L. *lyra;* Gr. *lura*, a harp; It. and Sp. *lira*]: oldest stringed musical instrument of the Egyptians and Greeks. There are many kinds and sizes; e.g., Lyre da Braccio, Lyre da Gambe, Lyre Guitare, etc. LYRIC, a. *lĭr′ĭk*, or LYRICAL, a. *lĭr′ĭ-kăl* [L. *lyrĭcus*, of or pertaining to a lute or lyre]: sung, or fitted to be sung, to the harp or lyre. LYR′IC, n. name given to a certain species of poetry, because it was originally accompanied by the music of that instrument. Lyric poetry concerns itself with the thoughts and emotions of the composer's own mind, and outward things are regarded chiefly as they affect him in any way. Hence it is characterized generally as *subjective*, in distinction from epic poetry, which is *objective*. Some lyric poetry has an objective form, but on consideration reveals as its motive a subjective effect. Purely lyrical pieces are, from their nature, shorter than epics. They fall into several divisions, the most typical of which is the *song*, which is subdivided into *sacred* (hymns) and *secular* (love-songs, war-songs, comic songs, etc.). LYRIST, n. *līr′ĭst*, one who plays on the harp or lyre.

LYRE′-BIRD, or LYRE-PHEASANT, or LYRE-TAIL (*Menura*): genus of birds, of which the best known species (*M. superba*) is a native of New S. Wales, where it is generally called LYRE-PHEASANT. The proper place of this genus has been disputed by ornithologists, some placing it among the *Insessores*, near to thrushes and wrens, others among gallinaceous birds, with megapodes. The large feet and habit of scraping, ally the lyre-bird with the latter; the form of the bill, the bristles at the base of the bill, and above all, its musical powers, connect it with the former, to which it was unhesitatingly referred by Cuvier. It is a bird about the size of a pheasant, frequenting the *brush*, or sparsely-wooded country, in the unsettled parts of New S. Wales, but retreating from inhabited districts. It is extremely shy and difficult to approach. It is far the largest of all song-birds. It possesses the power of imitating the song of other

birds. The tail of the male is very remarkable and splendid, the 12 feathers being very long, and having very fine and widely separated barbs; while, besides these, there are two long middle feathers, each of which has a vane only on one side, and two exterior feathers, curved like the sides of an ancient lyre. The lyre-bird makes a domed nest.—A second species (*M. Alberti*), also Australian, has recently been discovered, and has been named in honor of the late Prince Albert: the lyre-shaped feathers of its tail are comparatively short.

LYRENCEPHALA, n. *līr-ĕn-sĕf'a-lâ* [Gr. *lura*, a lyre; *engkephalon*, the brain, so named because the brain of reptiles somewhat resembles the loose brain of birds]: name given by Owen to reptiles.

LYS, *lēs*, or LEYE, *lī'ėh:* tributary of the Scheldt, rising in France near the little town of Lysbourg, in the dept. of Pas-de-Calais, and flowing n.e., joining the Scheldt at Ghent in Belgium after a course of 100 m. The Lys was formerly the boundary between France and Germany.

LYSANDER, *lī-săn'dėr:* famous Spartan warrior and naval commander, of extraordinary energy and military skill; but not less remarkable for cunning, revenge, and ambition: d. B.C. 395. He spent part of his youth at the court of Cyrus the Younger, and B.C. 407 was appointed to the command of the Spartan fleet (his first appearance in history), from which time he constantly prosecuted the design of overthrowing the Athenian power to exalt that of Sparta. He defeated the Athenian fleet at the promontory of Notion; and being again intrusted with the management of the fleet, after the defeat of his successor, Callicratidas B.C. 405, he was again victorious. He swept the s. part of the Ægean, and made descents on both the Grecian and the Asiatic coasts. He then sailed n. to the Hellespont, and anchored at Lampsacus. An immense Athenian fleet soon made its appearance at Ægospotami, on the opposite side of the straits, amounting to 180 ships. Of these, 171 were captured by Lysander a few days afterward. The blow to Athens was tremendous. Everywhere her colonial garrisons had to surrender, and Spartan influence predominated. Finally, B.C. 404, he took Athens itself. His popularity now became so great, especially in the cities of Asia Minor, that the Spartan ephors dreaded the consequences, especially as they knew how ambitious he was. He was even worshiped as a god, and his pride became boundless. All means were taken to thwart his designs, until finally he seems to have resolved to attempt the overthrow of the Spartan constitution; but this scheme was prevented by his death at the battle of Haliartus in the Bœotian war.

LYSIAS, *lĭs'ĭ-as:* Athenian orator: b. about 458 B.C.; d. about 380. He was a son of Cephalus, an orator, of whom Plato makes honorable mention in his *Republic.* Lysias, at 14 went to Thurium, in Magna Græcia, to

study philosophy and eloquence under Tisias and Nicias of Syracuse. Having settled in Thurium, he was employed in the government; but on the defeat of the Athenians in Sicily was banished with many of his countrymen. After Athens had recovered its freedom he exerted himself for the advantage of the city, and sacrificed much of his property for the public welfare. At first he gave instruction in eloquence; but finding himself surpassed by Theodorus, another teacher of oratory, he devoted his time to writing orations for others. He wrote more than 200, some say 400 orations, but only 223, however, were regarded as genuine. His style is applauded as a perfect example of the simple Attic eloquence. Only 34 of his orations have come down to our times. They have been published in various collections of the Attic orators; among the best separate editions of them are those by Baiter and Sauppe (1850); Cobet (1863); Thalheim (1901). See Jebb, *Attic Orators*, Vol. I. (1880).

LYSICRATES, *lī-sĭk'ra-tēz*, MONUMENT OF: located in Athens; one of the earliest examples of Corinthian architecture. It was dedicated 334 B.C. to Dionysus, by Lysicrates, as a trophy for winning the Dionysian games. The monument, which was built in the form of a round temple, was surmounted by a bronze tripod and stood on a cubical base 13 feet high. The building on account of its shape was popularly known as the 'Lantern of Demosthenes.'

LYSIMACHIA, *lĭs-ĭ-mâ'kĭ-a:* sharing the popular name *Loosestrife* with some plants of a different ord. (see LYTHRACEÆ): genus of plants of nat. ord. *Primulaceæ*, primroses. The species are numerous in various parts of the world. Gray enumerates 8 in the United States. One, *L. nummularia*, is a garden-plant introduced from Europe, the Moneywort.

LYSIMACHUS, *lī-sĭm'a-kŭs:* general and one of the diadochoi of Alexander the Great: b. Pella, Thessaly, 361 B.C.; d. near Corus 281 B.C. He was a low born Macedonian of great physical strength and courage. On the death of Alexander, 323 B.C., Thrace fell to the share of Lysimachus, who became also satrap of Macedonia in 286. The murder of his son Agathocles, a great favorite of the people, at the instigation of his Egyptian wife Arsinoe, provoked a revolt in Asia; Seleucus, satrap of Syria, took up the cause of the widow of Agathocles, Lysandra, and Lysimachus was killed in the battle near Corus which ensued. He founded a city on the Hellespont, named after him Lysimachi.

LYSIPPUS, *lī-sĭp'ŭs:* Greek sculptor who flourished in Sicyon between 360 and 316 B.C. Alexander the Great would permit no one but Apelles to paint his portrait, and no one but Lysippus to make his statue. Lysippus was first a smith, and afterward devoted himself to

sculpture, adopting the canon of Polycletes, as exemplified in that artist's *Doryphorus.* This canon, or standard of beauty, presents the human form with the head smaller, and the limbs longer and slenderer than in life. His statues were wrought with much greater ideal beauty than those of his predecessors. They were almost all, if not all, in bronze, and he is said to have left behind him some 1,500 works. Several of his more celebrated statues were those of Alexander, the most noted of which represented the Macedonian hero bearing a lance. This was considered as a sort of companion to the picture of Apelles in which Alexander was seen, like a second Zeus, launching a thunderbolt. Among his principal ideal works are the colossal *Zeus,* at Tarentum; *Phœbus Apollo in his four horse Chariot,* at Rhodes; the bronze statue of *Opportunity,* at the entrance of a temple in Sicyon, of which several copies are extant; the colossal bronze statue of *Hercules,* at Tarentum, and the famous *Athlete,* of which the *Apoxyomenus* of the Vatican is a copy.

LYSIS, n. *lī'sĭs* [Gr. *lusis,* a loosing; *luō,* I loose]: in *arch.,* a plinth or step above the cornice of the podium which surrounds the stylobate; in *med.,* the gradual cooling down and defervescence in fever slowly and regularly for several days without any marked increase of excreta.

LYSOL, a brown, oily liquid, having an odor resembling creosote. It is prepared from tar oil by saponification; is a useful antiseptic for the hands in a 1 or 2 per cent. solution, and is chiefly used in obstetrical operations.

LYTE, *līt,* Eliphalet Oram, b.s., m.s., a.m., ph.d.: American educator: b. Bird-in-Hand, Pa., 1842, June 29. In his youth he served in the Union army during the civil war. He was graduated from the State Normal School at Millersville, Pa., in 1868, was professor of English and pedagogics there, 1868-87, and has been principal of that institution from 1887. He was president of the National Educational Association 1890-9, and has published *Practical Bookkeeping* (1883); *Grammar and Composition* (1886); *Elementary English* (1898); *Advanced Grammar and Composition* (1898); and other text-books.

LYTE, Henry Francis: English Anglican clergyman and hymn writer: b. Ednam, near Kelso, Scotland, 1793, June 1; d. Nice, France, 1847, Nov. 20. He was graduated from Trinity College, Dublin, and took orders in the Anglican Church, 1815. He was curate of Lower Brixham, Devonshire, 1823-47. He published *Tales Illustrative of the Lord's Prayer* (1826); *Poems, Chiefly Religious* (1833); *Miscellaneous Poems* (1868); *Memoir of Henry Vaughan; Abide With Me; Pleasant Are Thy Courts; Jesus, I My Cross Have Taken;* and other hymns of his have become widely popular both in America and England.

LYTHRACEÆ, *lī-thrā'sē-ē:* natural order of exogenous plants, consisting of herbaceous plants, with a few shrubs; the branches frequently four-cornered. The leaves are generally opposite, entire and sessile. The flowers are solitary or clustered, regular or irregular, and either axillary, racemose, or spiked; the calyx tubular, the petals inserted into the calyx, very deciduous, sometimes wanting. The stamens are inserted into the tube of the calyx below the petals, sometimes equal to them in number, sometimes twice or thrice as many. The ovary is superior, generally 2-6 celled. The fruit is a membranous capsule with numerous seeds.—There are about 300 known species, natives of tropical and temperate, or even of cold climates. Some are occasionally applied to medicinal uses, upon account of astringent, narcotic, or febrifugal properties: among these is the PURPLE LOOSESTRIFE (*Lythrum salicaria*), growing in moist places and about the margins of ponds and streams, with beautiful leafy spikes of purple flowers; a decoction of either the root or the dried leaves of which is sometimes advantageous in diarrhœa: it grows in wet meadows in New England and New York. Other species of the genus *Lythrum* are found in other states. (For a plant similarly named, see LYSIMACHIA.) The Henna (q.v.) of Egypt is produced by *Lawsonia inermis*, a plant of this order. The leaves of another (*Pemphis acidula*) are said to be a common pot-herb on the coasts of tropical Asia. The leaves of *Ammania vesicatoria*, E. Indian aquatic plant, are very acrid, and are sometimes used as blisters.

LYTLE, *lĭt'l*, WILLIAM HAINES: American general and poet: b. Cincinnati, Ohio, 1826, Nov. 2; d. Chickamauga, Tenn., 1863, Sept. 20. He was graduated at Cincinnati College, studied law and practiced for a short time. He served as a captain in the Mexican war, and later was a member of the Ohio legislature. During the civil war he was colonel of the 10th Ohio regiment and was brigadier-general of volunteers, having been promoted to that rank for gallant conduct. He was killed at the battle of Chickamauga. His best-known poem is the famous *Address of Antony to Cleopatra*, the opening line of which is 'I am dying, Egypt, dying.' Consult *Poems* with *Memoir* by Venable (1884). No complete collection of his works was published.

LYTTELTON, *lĭt'l-ton*, GEORGE, Lord: 1709-1773, Aug. 22; son of Sir Thomas Lyttelton, of Hagley, in Worcestershire, descendant of the great Sir Thomas de Littleton (q.v.). He was educated at Eton and Christ Church, Oxford; entered parliament 1730, held several high political offices, and was raised to the peerage 1759. Lyttelton had formerly considerable repute as an author. His best known works are *Observations on the Conversion and Apostleship of St. Paul* (1747), *Dialogues of the Dead* (1760), *History of Henry II.* (1764).

LYT'TLETON (or LIT'TLETON, or LYT'TELTON), Sir THOMAS DE. See LITTLETON, Sir THOMAS DE.

LYTTON, *lit'on*, Lord (better known as Sir EDWARD GEORGE EARLE LYTTON BULWER-LYTTON, Baronet): 1805, May—1873, Jan. 18; youngest son of Gen. Bulwer of Wood Dalling and Haydon Hall, Norfolk, England. He received his education at Cambridge, where he graduated B.A. 1826, M.A. 1835, distinguished as a brilliant writer, and to some extent as a politician.

His first publication was a poem on *Sculpture*, which gained the Chancellor's prize for English versification at Cambridge 1825. In 1826, he published a collection of miscellaneous verse, *Weeds and Wild Flowers*, and in the year following, a tale in verse with the title *O'Neill, or the Rebel*. In 1827, his first novel, *Falkland*, was published anonymously. Next year, he published *Pelham*, which astonished the critics by its cynicism and its icy glitter of epigram. *The Disowned* (1828), *Devereux* (1829), and *Paul Clifford* (1830) followed in rapid succession. In 1832, he broke into more passionate and tragical regions in *Eugene Aram*, and after that ceased for a period to convulse the libraries. About this time he succeeded Campbell as editor of *The New Monthly Magazine*, and contributed to its pages a series of papers afterward collected under the title *The Student*. In 1833, he produced *England and the English*, and *Godolphin*. In 1834, he returned to fiction, and published in illustrated form *The Pilgrims of the Rhine*. This was followed in the same year by *The Last Days of Pompeii*, a work of higher class than any of his former productions. *Rienzi* followed (1835) in the same splendid vein, and received the same admiration. His next work was a play in five acts, *The Duchess of La Vallière*, which failed on the stage 1836. *Ernest Maltravers* came the year after, which, as containing his views on art and life, has ever been a favorite with his more thoughtful readers. In the same year, he published *Athens; its Rise and Fall*, full of research and splendid rhetoric. *Leila* and *Calderon*, and *Alice, or the Mysteries*, appeared 1838. His next efforts were in the difficult walk of the drama, in which he had formerly failed. He produced *The Lady of Lyons* and *Richelieu*, both of which remain among the most popular modern English plays.

Eva, The New Timon (1846), *King Arthur* (1848-9) were poems; the next novels were *Zanoni* (1842); *The Last of the Barons* (1843); *Harold* (1848); and *Lucretia* (1847). Some great triumphs were yet to come. *The Caxtons* (1850), a domestic novel, followed by *My Novel* (1853), gave the world a crowning proof of Lytton's versatility. *What will He do with It?* (1858); *A Strange Story* (1862); *The Haunters and the Haunted* (1861); *St. Stephen's*, a clever poem; *Money* and *Walpole*, comedies; *Caxtoniana*, essays; and the translation of Horace's *Odes* (1869) deserve mention. Lytton wrote

much for the Reviews; and as rector of Glasgow and Edinburgh Universities gave brilliant addresses. His latest fictions were *The Coming Race*, published anonymously 1871; *Kenelm Chillingly* (1873); the incomplete *Pausanias* (posthumous 1876); and *The Parisians* (unfinished, 1873). A collection of his *Speeches* appeared 1874. His writings show wonderful versatility, untiring rapidity in production, great brilliancy of invention, splendid richness of style—occasionally overwrought—and a capacity for strange speculations and discursive theories by which is added sometimes the charm of mystery. His moving sentiments were noble and his influence was healthful.

At the age of 26, Lytton entered parliament as member for St. Ives, and attached himself to the Reform party. In 1832, he was returned as member for Lincoln, and held that seat till 1841. In 1835, he received his baronetcy from the Melbourne administration ostensibly for brilliant services rendered to his party as a pamphleteer. In 1844, he succeeded, on the death of his mother, to the Knebworth estates, and sought to return to parliament; in 1847, he contested Lincoln unsuccessfully; and in 1852, he was returned as member for the county of Herts, and attached himself to the party headed by Lord Derby. During the Derby administration (1858-9), he was colonial sec. He did not shine as a debater, but some of his speeches were eloquent. The first vols. of *Life, Letters and Literary Remains* of Lytton, by his son, were published 1883. See also lives by Cooper (1873), and Ten Brink (1882).

LYT'TON (Edward Robert Lytton Bulwer-Lytton), Earl: b. London 1831, Nov. 8; d. Paris 1891, Nov. 29; son of Lord Edward George Earle Lytton Bulwer-Lytton. When 18 years of age, he entered the diplomatic service. He has served the crown as a diplomatist in almost every European capital, and 1876 became viceroy of India. In 1877, he presided at the ceremony of proclaiming the queen empress of India. The tedious and unpopular Afghan war began in his viceroyalty; and on the overthrow of the conservative ministry 1880, Lytton resigned and returned to England. He received the grand cross of the Bath 1877, was raised to the dignity of an earldom 1880, and was appointed ambassador to France 1887. His works, published mostly under the pen-name Owen Meredith, include *Clytemnestra* (1855); *The Wanderers* (1859); *Lucile* (1860); *Tannhäuser* (1861); *The Ring of Amasis* (1863); *Orval, or the Fool of Time* (1869); *Fables in Song* (1874); *Speeches of Edward, Lord Lytton* (1874); *Life, Letters, and Literary Remains of Edward Bulwer, Lord Lytton* (1883); *Glenaveril* (1885); *After Paradise* (1887); and *Ad Æsopum* (1889). *King Poppy*, his best poetical work, was published posthumously (1892).

M

M, or m, *ĕm:* thirteenth letter of the Eng. alphabet, a consonant, and one of the *labials;* from the closure of the lips in its pronunciation being attended with a humming sound, it is called also a *labial-nasal.* See LETTERS. Its Hebrew name is *Mem,* i.e., 'water,' and its original form was probably a waving line representing water. M is liable to many changes, and often disappears altogether. The Greek *molubdos* corresponds to Lat. *plumbum;* an old form of Lat. *bonus, benus,* or *belus,* was *manus,* which probably accounts for the comparative *melior.* Final *m,* in Latin, was pronounced with such a weak, undecided sound that it was proposed to write it with half the letter; hence, also, before the spelling of the language had become fixed, it had in many cases been altogether dropped, as in *lego* for *legom:* see INFLECTION. The nasal sound in final *m* in French seems a relic of the Roman pronunciation.

M': Scotch prefix of some proper names. See MAC.

MA, n. *mâ:* mother—a contracted form of *mamma,* child's name for mother.

MA'AM, n. *măm:* madam—the usual colloquial contraction of *madam.*

MAARTENS, *mâr-tĕnz,* MAARTEN, LL.D.: pseudonym of the Dutch author, J. M. W. VAN DER POORTEN SCHWARTZ: b. Amsterdam 1858, Aug. 15. He passed his early life in England; was educated in Germany and at the University of Utrecht, was admitted a barrister, but chose literature as a profession, and in 1890 published his first work, *The Sin of Joost Avelingh,* which at once arrested the attention alike of critics and of reading public. This, like all his volumes, was written at first hand in English, not, as has been sometimes supposed, translated from Dutch manuscript. Maartens thus presents the curious instance of an author electing to address wholly a foreign public. Indeed, only with reluctance, to safeguard himself against unsatisfactory translations, did he consent to the publication of his books in Dutch. His further works are: *An Old Maid's Love* (1891); *A Question of Taste* (1891); *God's Fool* (1892); *The Greater Glory* (1894); *My Lady Nobody* (1895); *Her*

Memory (1898); *Some Women I Have Known* (1901); *My Poor Relations* (1903); *Dorothea* (1904); *The Jailbird*, a one act play (1905); etc.

MAAS, *mâs* (Lat. *Mosa*, Fr. *Meuse*): large affluent of the Rhine, rising in France, in the dept. of Haute-Marne, near the village of Meuse, flowing northerly through France, Belgium, and Limburg, then e. through Holland to the German ocean. From its junction with the Waal, a branch of the Rhine, to the mouth of the Yssel, it is called the Mervede. At Dordrecht, it divides into two branches, inclosing the island of Ysselmonde—of these, the n. is called the Nieuwe Maas (New Maas), the s. the Oude Maas (Old Maas). These branches unite on the e. side of the island of Rozenburg, after which the river falls into the North Sea, long. 4° 5′ e. Its entire course is 500 m., for 360 m. of which (from Verdun, dept. of Vosges, France, to the mouth of the river) it is navigable.

MAASHA, n. *mâ-ăsh'a* [native name]: E. Indian coin, in value about five cents.

MAASTRICHT, or MAESTRICHT, *mâs'trĭcht* (called by the Romans *Trajectum ad Mosam*, to distinguish it from *Trajectum ad Rhenum*, now Utrecht): very old town, cap. of the province of Limburg, in the Netherlands. Pop. (1900) 34,182. Maastricht is on the left bank of the river Maas, which separates it from the town of Wijk, with which there is connection by a stone bridge, 500 ft. in length. Formerly an important fortress, Maastricht is still a garrison town; but the ramparts were dismantled 1871-78. The town was founded in the 5th century, the seat of the bishop being transferred thither after Attila had plundered Tongres, 451. It is 15 m. n. of Liége, 18 w. of Aix-la-Chapelle (Aken), and pleasantly situated in a hilly district. The streets are broad, and the houses regularly and well built, giving an air of beauty and respectability. There are many paintings, and a select public library in the Town-house, a large square stone building, ornamented with a tower, and standing on the great market. Maastricht has numerous churches; also a Jewish synagogue; three hospitals, two orphan houses, an Athenæum, and other public buildings. The plains are shaded with trees and refreshed by fountains. There is railway communication with all parts of the Netherlands, and other countries of the continent. Maastricht has considerable trade. Earthenware, glass, arms, tools, objects in lead, copper and zinc, tobacco, and cigars are manufactured; other industries are soap-boiling, gin-distilling, brewing, sugar-refining, and iron-founding.

Maastricht has often felt the scourge of war, and the evils incident to a frontier fortified town. It is surrounded by broad and deep canals. It is commanded by the Pietersberg, formerly called *Mons Hunnorum*, a soft calcareous mountain, which has been extensively mined,

forming a cavernous labyrinth several leagues in length. Among other fossils, there have been found in these workings two heads of the gigantic Mososaurus (q.v.). See also MAESTRICHT BEDS.

MAB, n. *măb:* queen of the fairies in Northern mythology: in English poetry she appears as the 'fairies' midwife' delivering the brain of its dreams (*Romeo and Juliet,* Act i. sc. iv.).

MABA, n. *mâ'ba* [native name of the tree on the island of Tongataboo]: germs of *Ebenaceæ,* closely akin to diospyros. It is believed to furnish the ebony of Ceylon. The berries of *M. buxifolia* are eaten by the natives of India. The wood is dark-colored, very hard and durable.

MABBY, n. *măb'ĭ* [native name]: spirit distilled from potatoes in Barbadoes.

MA'BERY, *mā'bėr-ĭ,* CHARLES FREDERIC, SC.D.: American chemist: b. North Gorham, Maine, 1850, Jan. 13. He was graduated at the Lawrence Scientific School, Harvard, in 1876, and was assistant instructor in chemistry there from 1875 to 1883, since when he has been professor of chemistry in the Case School of Applied Science of Cleveland, Ohio. In the investigation of the composition of American petroleum his work has brought him into special prominence. He has also done valuable work in connection with the production of aluminum by means of electricity. The results of his original investigations at Harvard were largely published by him in papers appearing in the *American Chemical Journal.*

MABIE, *mā'bē,* HAMILTON WRIGHT, A.B., A.M., L.H.D., LL.B., LL.D.: American editor and author: b. Cold Spring, N. Y., 1845, Dec. 13. He was graduated from Williams College in 1867, from the Columbia Law School in 1869, practiced law in New York in 1869-79, in 1879 became connected with the *Christian Union* (now *The Outlook*), and in 1884 formally entered its editorial staff. He became known as a contributor of essays to periodicals, and as an occasional speaker and lecturer on educational and literary subjects. Among his public addresses was that at the dedication of the Zolnay bust of Poe in the University of Virginia. He also became president of the New York Kindergarten Association. His works are: *Norse Stories Retold from the Eddas* (1882); *Nature in New England* (1890); *My Study Fire* (1st series, 1890; 2d, 1894; 3d, 1899); *Under the Trees and Elsewhere* (1891); *Short Studies in Literature* (1891); *Essays in Literary Interpretation* (1892); *Nature and Culture* (1897); *Work and Culture* (1898); *In the Forest of Arden* (1898); *The Life of the Spirit* (1899); *Shakespeare: Poet, Dramatist and Man* (1900); *Works and Days* (1902); *Parables of Life* (1902); *Backgrounds of Literature* (1903); *Myths Every Child Should Know* (1905); *Fairy Tales Every Child Should Know* (1905);

The Great Word (1905); *Heroes Every Child Should Know* (1906); *Legends That Every Child Should Know* (1906); etc.

MABILLON, *mâ-bē-yōng'*, JEAN: learned Benedictine historian: 1632, Nov. 23—1707, Dec. 27; b. St. Pierremont, in Champagne. He studied at the Collége de Reims; assisted D. Luc d'Achery in his labors on his vast historic *recueil*, entitled *Spicelegium;* undertook an ed. of the works of St. Bernard; and 1668, published the first vol. of *Acta Sanctorum Ordinis S. Benedicti*, of which the last part appeared 1702. His classical work *De Re Diplomaticâ* appeared Paris 1681. Colbért offered him a pension of 2,000 livres, but he declined it. In 1683, Colbert sent him to Germany, to collect documents relative to the history of France, and he was afterward sent to Italy for a similar purpose. He died in Paris. Other works are *Vetera Analecta* (1685); *Musæum Italicum, seu Collectio Veterum Scriptorum ex Bibliothecis Italicis eruta* (1689).

MABINOGION. See WELSH LANGUAGE and LITERATURE.

MABLY, *mâ-blē*, GABRIEL BONNOT DE: French ecclesiastic and publicist: b. Grenoble 1709, March 14; d. Paris 1785, April 23. His family name was Bonnot. Like his younger brother, the philosopher Condillac (q.v.), he was destined for the church, and after studying at the seminary of Saint Sulpice in Paris was ordained subdeacon. He showed little liking for theology, and for some time was secretly employed in affairs of state by his relative Cardinal de Tencin, minister of Louis XV., conducting the most difficult negotiations and writing elaborate reports with an ability for which the minister received all the credit. Later he applied himself to literature, and in 1748 published his *Droit publique de l'Europe*, which achieved a remarkable success. It was followed by *Observations sur les Grecs* (1749); *Observations sur les Romains* (1751); *Entretiens de Phocion* (1753); *Observations sur l'Histoire de France* (1755); *Principes des Negociations* (1757); *De la Manière d'écrire l'Histoire* (1773); *De la Législation* (1776); *De l'Idée de l'Histoire* (1778); and *Principes de Morale* (1784). Having been requested by the government of Poland to prepare for them a code of laws, he visited that country in 1771, and published in 1781 a work *Du Gouvernement de la Pologne.* He was also consulted by the American congress in 1783 on the preparation of the constitution, and embodied his views in his *Observations sur le Gouvernement et les Lois des Etats Unis d'Amerique* (1784). In this work he foretold the speedy downfall of the United States. Consult: Guervier, *L'Abbé Mably, Moraliste et Politiqué* (1886).

MABUSE' (JAN DE GOSSAERT). See GOSSART, JAN DE.

MAC, or Mc, or M', a. *măk:* common Gaelic prefix fre-

quent in Scottish names. It means 'son,' synonymous with *Fitz* in English, and is prob. allied to Gothic *magus*, a son, a boy, the feminine of which is *magaths* (Ger. *magd*, a maid). The root is prob. Sanskrit, *mah*, to grow (see G). In Welsh, *magu* means to breed. The Welsh form of *Mac* is *Map*, shortened into *'ap* or *'p*, as Ap Richard, Son of Richard, whence Prichard. (O'=grandson, in Ireland.)

Note.—Mc and M' are shortened forms of Mac, with same pronunciation.

MACACO, n. *ma-kâ'kō*, or MACAUCO, *ma-kaw'kō* [native name]: Buffon's name for *Lemur cotta*, the ring-tailed or cat-like lemur. Its color is chinchilla gray, with a banded tail of black and gray rings; the under parts are white. The hind limbs exceed the fore limbs in height, and this gives the body an arched appearance. They are readily domesticated. See LEMUR.

MACACUS, n. *mă-kā'kŭs:* bonnet-apes, or ape-baboons —a genus of old world monkeys.

MACADAM, *mak-ăd'am*, JOHN LOUDON: road-maker: 1756-1836: b. Scotland. He passed his youth in the United States. On his return, he was appointed manager of a district of roads in Ayrshire, and originated the system of road-making now known by his name. In 1819, he was appointed by parliament to superintend the roads in the Bristol district, England; 1827, gen. surveyor of the metropolitan roads; receiving as reward of his success a grant of £10,000 from government. His system rapidly became general throughout England, and was introduced into France. Macadam died at Moffat, Dumfriesshire. See MACADAMIZE.

MACADAMIZE, v. *măk-ăd'ăm-īz* [from the inventor, *John L. Macadam* (q.v.)]: to build a road or path with broken stones of selected sizes, forming a hard smooth surface. MACAD'AMI'ZING, imp. MACAD'AMIZED, pp. *-īzd:* ADJ. denoting a road made or repaired with carefully prepared stones. The process of *Macadamizing* is as follows: For the foundation of a road, it is not necessary to lay a substratum of large stones, pavement, etc., as it is indifferent whether the substratum be hard or soft; and if any preference is due, it is for the latter. The material for roads must consist of *broken stones* (granite, flint, or whinstone, far the best); these must in no case exceed six ounces each in weight, and stones of one to two ounces are to be preferred. The large stones in the road are to be loosened, and removed to the side, where they are to be broken into pieces of the regulation weight; and the road is then to be smoothed with a rake, so that the earth may settle down into the holes from which the large stones were removed. The broken material is then to be spread over it; and it is of great importance to the quality of the road, that it be not *laid* on in shovelfuls to the requisite depth, but *scattered*

in shoveful after shovelful, till a depth of 6 to 10 inches, according to the quality of the road, has been obtained. The road is to have a fall from the middle to the sides of about 1 ft. in 60, and ditches are to be dug on the field-side of the fences to a depth of a few inches below the level of the road. This system, which at one time promised to supersede every other, is calculated to form a hard and impermeable crust on the surface, thus protecting the soft earth below from the action of water, and so preventing it from working up through the road-bed in the form of mud. Strange to say, it has succeeded admirably where a road had to be constructed over a bog or morass: in some other circumstances, it has been found deficient, and various improvements have been made on the principle which it presents. One of these is the Telford road (named from its inventor) in which large stones are imbedded as foundation with the interstices filled with sand, earth, etc., pounded down; then, successive layers of broken stone of gradually decreasing sizes, the top layer being of very small fragments—each layer being tamped with gravel, sand, etc., and a very heavy roller being passed over the top when finished. See ROADS.

McALLISTER, *mak-ăl'ĭs-tĕr*, FORT: earthwork (23 guns) erected by the Confederates on Genesis Point, on the Great Ogeechee river, 6 m. from Ossabaw Sound and 12 m. s. of Savannah, as an additional protection to that city. Its garrison of about 200 men resisted assaults by Union monitors under Com. Worden 1863, Jan. 27, Feb. 1, and Mar. 3; but were forced to surrender to the 2d division 15th army corps under Gen. Hazen, after an assault and hand-to-hand fight over the parapet 1864, Dec. 13. The capture of this fort led to the surrender of Savannah and the triumphant completion of Sherman's march from Atlanta to the sea.

McALL MISSION, in France: organization of Christian work on a missionary basis, with special reference to the working-people. Though entirely Protestant in spirit, it is independent of sectarian control, and does not make it a special object to attack the Roman Church. It concerns itself with making Christ known as the Helper of men. It originated in a visit to Paris 1871 by the Rev. R. W. McAll, pastor of a Congl. church in Hadleigh, Lancashire, England. He and his wife were impressed with the opportunity for religious work in what were deemed the most unpromising quarters of Paris; and their intended four days' visit developed into the present mission. Mr. McAll studied the language, previously unknown, and opened his first station 1872, Jan., in Belleville, the artisan quarter. The station, as all stations since have been, was a shop, with a large cloth sign inviting working-people. The work has grown, drawing help and helpers from England, Scotland, and the United States, and meeting surprising favor among

the French people, until there are 72 in France, 65 in the United States, 22 in England, and 10 in Canada. In each district around a station small bills of invitation are distributed, and persons at the doors encourage those who will to enter. In each room is a harmonium, and simple hymns are sung alternately with short addresses or readings. Brevity is the rule. On Sundays there is more of the usual form of a religious service, with a short sermon and with prayer. The reading of the Bible is always listened to with great interest. Besides the distinctively spiritual results in many cases of conversion, a gratifying feature is that the police department of Paris find marked decrease of disagreeable duty in some of the most turbulent districts as the result of the work at some of these stations. Frequent calls for the establishment of mission-stations come from towns in the provinces: these are met as far as men and money for them can be procured. In the United States the American McAll Assoc. has been organized to gather contributions for the work.

McALPINE, *mak-ăl'pĭn*, WILLIAM JARVIS: 1812-1890, Feb. 16; b. New York; civil engineer. He received an academic education; became a civil engineer 1827; engaged in the construction of canals and other hydraulic works till 1839; engineer of the eastern division of the Erie canal extension till 1846; chief engineer of the construction of the dry docks in the Brooklyn navy yard; elected N. Y. state engineer 1852; and was state railroad commissioner 1854-56. Subsequently he was acting pres. and chief engineer of the Erie railroad, and engineer of the Chicago and Galena and the Ohio and Mississippi railroads; constructed the waterworks in Albany and Chicago, and planned those in Brooklyn, New Bedford, and elsewhere; and 1870, at the request of the Austrian govt. prepared plans for the improvement of the cataracts of the Danube, which were adopted. His last work was as consulting engineer on construction of the new capitol at Albany.

MACAO, *mâ-kow'*: Portuguese settlement on the coast of China, lat. 22° 11′ n., long. 132° 33′ e., on the w. part of the estuary of the Canton or Pearl river, about 40 m. from Hong-kong, on the opposite side of the estuary. Macao, about eight miles in circuit, is on a small peninsula, projecting from the s.e. extremity of the large island of Hiang-shan. Its position is agreeable, nearly surrounded with water, and open on every side to the sea-breezes, with good variety of hill and plain. The town is slightly defended by some forts. Daily steam-communication is maintained with Hong-kong. The principal public buildings are the cathedral and churches. It is one of the most salubrious ports in China, and recent sanitary improvements have added to its healthfulness. The maximum temperature is about 90°, the minimum about 43°. The Portuguese obtained permission from the Chinese authorities 1557 to settle in Macao on account of

their assistance in hunting down a pirate-chief whose headquarters were in this island. The Chinese, however, held, until recently, a lien upon the place, requiring of the Portuguese 500 taels ground-rent, retaining also jurisdiction over their own people. The privileges obtained by England through the treaty of Nankin were subsequently extended to the Portuguese, who, by successive aggressions, have become wholly independent of the Chinese. The anchorage at Macao is defective; large vessels cannot approach nearer than six miles. After the rise of Hong-kong, the commerce of Macao suffered severely. Some years ago, a suspicious trade in coolies sprung up; but 1873 the Portuguese government abolished the trade. Here Camoens, in exile, composed his *Lusiad.* The chief exports are tea, cassia and cassia-oil, anise and anise-oil, and opium. There is much smuggling carried on; and the revenue is derived largely from the tax on the notorious gambling tables. Pop. about 80,000.

MACAQUE, *ma-kâk':* quadrumana of family *Simiadæ,* and of the section *Catarhina* or old-world monkeys. These animals form the genus *Macacus.* Their classification is somewhat confused. See RHESUS MONKEY; WANDEROO; BARBARY APE; MONKEY; also QUADRUMANA.

MACARIANS, n. *ma-kär'ĭ-anz:* in *church history,* the Monothelites of Antioch, so called from Macarius, patriarch at the time of the second Council of Constantinople, 620, at which he defended his opinions, but was condemned.

MACARONI, or MACCARONI, n. *măk'ă-rō'nĭ* [O. It. *maccaroni;* It. *maccheroni,* a sort of paste, originally of flour, cheese, and butter—from *maccare,* to bruise or crush]: fine wheaten flour made into a paste and formed into long hollow tubes and baked; a medley; something fanciful and extravagant; a fool; a fine gentleman; a fop. MACARONIC, a. *măk'ă-rŏn-ĭk,* pertaining to or resembling macaroni; empty; trifling (see MACARONIC VERSE).—*Macaroni,* long peculiar to Italy, and almost to Genoa, is now made all over Italy, and at Marseilles and other places in s. France. Strictly speaking, the name applies only to wheaten paste in the form of tubes, varying in diameter from an ordinary goose-quill to the size of an inch; but there is no real difference between macaroni and the fine threadlike vermicelli, and the variety of forms of *Italian pastes* used for soups. Only the hard kinds of wheat are applicable to this manufacture, containing a large percentage of gluten. The wheat is first ground into a coarse meal, from which the bran is removed—in that state it is called *Semola* (see also SEMOLINA); during the grinding it is necessary to employ both heat and humidity to insure a good semola. The semola is worked into a dough with water; and for macaroni and vermicelli it is forced through gauges, with or without mandrels, as in wire and pipe-drawing; or for *pastes,* it

is rolled out into very thin sheets, from which are stamped out the various forms of stars, rings, letters, etc. The manufacture is of great importance to Italy, where it forms a large article of home consumption, and whence it is exported to all parts of the world. In Genoa alone nearly 170,000 quintals of wheat are annually used for it. The finest qualities are those whitest in color, and which do not burst or break in boiling; it should swell considerably, and become quite soft; but if it does not retain its form when boiled it has not been made of the best wheat. A few makers flavor and color it with saffron and turmeric, to suit certain tastes. The manufacture of macaroni is conducted on an extensive scale in the United States, a large number of the factories being in New York. The annual imports from Italy aggregate 500,000 boxes.

MACARONIC VERSE, *măk'ă-rŏn'ĭk:* properly a kind of burlesque poetry, in which, with Latin, words of other languages are introduced with Latin inflections and construction; but the name is sometimes applied to verses merely a mixture of Latin and the unadulterated vernacular of the author, of which a very clever specimen is the lines of Porson on the threatened invasion of England by Bonaparte, entitled *Lingo drawn for the Militia* (see Wheatley's *Anagrams,* etc.). Teofilo Folengo, called Merlino Coccajo, learned and witty Benedictine of Mantua (1484-1544), has been erroneously regarded as the inventor of macaronic verse; but he was the first to employ the term with reference to the mixture in the dish called macaroni. His *Maccaronea* (Tusculanum 1521, and many editions) is a long satiric poem, in which Latin and Italian are mingled. Fortunately macaronic verse has not been extensively cultivated.

MACAROON, n. *măk'ă-rôn* [F. *macaron,* a macaroon, a cake—from It. *macarone,* a macaroon]: sweet biscuit made of the meal of sweet almonds, white of egg, and powdered sugar. The most esteemed formula for making macaroons is either prepared almond-meal dry, or better, almonds just blanched and beaten into a paste, one lb., thoroughly incorporated with 1½ lbs. of refined sugar in powder, an ounce of the yellow part of fresh lemon-peel grated fine, and the whites of six eggs. When thoroughly mixed, the paste is made into the shape of small flat oval biscuits, and placed on sheets of wafer-paper, and baked.

MacARTHUR, Arthur: an American military officer; b. in Massachusetts 1845, June 2; served in the volunteer army during the civil war, attaining the rank of colonel; and was mustered out 1865, June 19. After the war he entered the regular army with the rank of lieutenant; was promoted captain, 1866, July 28; major, 1889, July 1; lieutenant-colonel, 1896, May 26; brigadier-general, 1900, Jan. 2; major-general, 1901, Feb. 5, and

lieutenant-general, 1906, Sept. 15. He served bravely in Indian wars; was assigned to the Department of Dakota; served in the war with Spain; and then was assigned to the Philippines; took a conspicuous part in the battle of Manila, and for his excellent service was promoted major-general of volunteers; was commander of the military division of the Philippines 1900-1, of the Department of Colorado 1901-2, of the Department of the East 1902, July 21—Nov. 8, of the Department of the Lakes 1902-3, of the Department of California 1903, April 1—1904, and of the Pacific Division 1904, Jan. 15—1907, April 30.

McARTHUR, *mak-âr'thėr*, DUNCAN: 1772, June 14—1839, Apr. 28; b. Dutchess co., N. Y.: soldier. He removed with his parents to w. Pennsylvania when a boy; took part in the campaigns against the Indians in Kentucky and Ohio, 1790-94; settled near Chillicothe, O., and engaged in surveying; became member of the legislature 1805, maj.-gen. militia 1808, col. 1st Ohio volunteers 1812, May 2; second in command at Hull's surrender at Detroit, brigadier-general U. S. A. 1813, Mar. 12; and commander of the army of the west 1814, May 31; and made an unsuccessful attempt to conquer Upper Canada 1814, Oct.-Nov. After the war he was member of the legislature 1815-21, speaker 1819, member of congress 1823-29, governor 1830-32, and was defeated for re-election to congress by a single ballot 1832.

MACARTHUR, JOHN: 1823, May 13—1890, Jan. 8; b. Bladenock, Scotland: architect. He removed to the United States 1833; studied architecture and was a foreman in the construction of the Penn. hospital; became architect and supt. of the Philadelphia house of refuge 1848; was architect in charge of federal hospitals and other buildings in Philadelphia 1861-65; designed and superintended till his death the construction of the Philadelphia municipal building; and designed the new post-office building in Philadelphia, the U. S. naval hospitals at Philadelphia, Annapolis, and San Francisco, several Penn. state hospitals for the insane, Lafayette College, and three large hotels and the *Public Ledger* building in Philadelphia.

McARTHUR, ROBERT STUART, D.D., LL.D.: Baptist minister: b. Dalesville, Quebec, Canada, 1841, July 31; of Scotch descent. He graduated at Rochester (N. Y.) Univ. 1867, and at Rochester Theol. Seminary 1870; and then became pastor of Calvary Bapt. Church, New York. He is a diligent and faithful pastor and a vigorous administrator, genial in social intercourse and impressive in the pulpit; and his church has become one of the largest in the United States. He was connected editorially with the *Baptist Quarterly* and the *Christian Inquirer*, and is a frequent contributor to journals of his denomination. Among his numerous publications are *Calvary Pulpit;*

Divine Balustrades; The Attractive Christ and Other Sermons (1898); *Quick Truths in Quaint Texts; Celestial Lamp* (1899, 2d ed. 1907); *Old Book and Old Faith* (1899); *Lectures on the Land and the Book* (1899); *Around the World* (1899); *Palestine* (1899); *The Preeminenee of Christ* (1905); *Advent, Christmas, Easter and Other Sermons* (1907); etc.

MACART'NEY COCK (*Euplocomus ignitus*): splendid gallinaceous bird, called also the FIRE-BACKED PHEASANT, native of Sumatra and other islands of the same part of the world. It was described first in the account of Lord George Macartney's embassy to China 1792. The entire length of the adult male is about two ft. The sides of the head are covered with bluish-purple skin. The crown of the head has an upright crest of feathers with naked shaft, and a number of slender spreading barbs at the tip. The tail, depressed, is forked; erect, it is slightly folded, as in the common fowl. The general color is a deep black, with blue metallic reflections; the middle of the back, brilliant orange; the tail, bluish green, orange, and white. The female is smaller, and almost entirely of rich brown color. The head is not crested, as in the male, but the hind feathers are lengthened.—The genus *Euplocomus* is allied both to *Gallus* (Fowl) and to *Phasianus* (Pheasant), and perhaps still more nearly to *Lophophorus* (Impeyan). Two or three splendid E. Indian species are referred to it.

MACASSAR, *mâ-kâs'sėr:* most southern portion of the island of Celebes (q.v.), lat. 4° 35′—5° 50′ s., long. 119° 25′—120° 30′ e.; traversed by a lofty chain of mountains. Macassar was formerly the greatest naval power among the Malay states, but is now divided into the Dutch possessions, and Macassar Proper, which is of little importance and governed by a native king, who pays tribute to the Netherlands. The natives are among the most civilized and enterprising, but also the most greedy, of the Malay race. They carry on a considerable trade in tortoise-shell and edible nests, grow abundance of rice, and raise great numbers of horses, cattle, sheep, and goats; fishing is also extensively carried on. The Macassars are chiefly Mohammedans; the mosques are of palm-wood.

MACASSAR: chief town of the dist. of Macassar, residence of the Dutch gov. and officials; on the Strait of Macassar, which separates Celebes from Borneo; 5° 10′ s. lat., 119° 20′ e. long.; on a high point of land, watered by two rivers and smaller streams. It is surrounded by a stone-wall, and further defended by palisades and Fort Rotterdam. The harbor is safe and convenient, but difficult to enter. The climate is healthful, and all kinds of provisions are plentiful. The exports consist of the various products of Celebes, brought from the settlements to Macassar for shipment: the chief are rice, sandal-wood, ebony, tortoise-shell, gold, spices, coffee,

sugar, wax, coco-nuts, tobacco, opium, salt, edible nests, etc. Imports from China are principally silk fabrics and porcelain; from the Netherlands, cotton and linen goods, firearms, opium, spirits, etc. A very large proportion of the export and import trade is between Macassar and the free port of Singapore, about a third part being with Java. Annual imports amount to about $500,000, and exports to the same value. The Portuguese first formed a settlement in Macassar, but were supplanted by the Dutch, who, after many contests with the natives, gradually attained supreme power. In 1811, Macassar fell into the hands of the British, who, 1814, defeated the king of Boni, and compelled him to give up the regalia of Macassar. In 1816, Macassar was restored to the Dutch, and shares the mercantile prosperity of the Netherlands' possessions in the Eastern Archipelago. Pop. about 20,000.

MACAU'CO. See LEMUR.

MACAULAY, *ma-kaw'lĭ*, CATHARINE SAWBRIDGE: English historian: b. Wye, Kent, 1731, Apr. 2; d. Binfield, Berkshire, 1791, June 22. In 1760, she was married to George Macaulay, a London physician. She was an ardent republican, and a great admirer of Washington, with whom she corresponded, and whom she visited in 1785. She published a *History of England from the Accession of James I. to the Revolution* (8 vols. 1763-71), once very popular, and eulogized by Pitt in the House of Commons, but now neglected.

MACAULAY, JAMES: Scottish novelist: b. Edinburgh, 1817, May 22; d. there, 1902, June 20. He was educated at the University of Edinburgh, and for 35 years was in the service of the Religious Tract Society as editor-in-chief. In 1851-7, he was joint editor of the *Literary Gazette*, and in 1858 became editor of the *Leisure Hour Sunday at Home. The Boy's Own Paper* and *The Girl's Own Paper* were founded by him. He was a voluminous writer, and among his published works the following may be mentioned: *Across the Ferry; First Impressions of America and its People* (1871); *Memory Helps in British History* (1873); *All True: Records of Adventure* (1879); *Luther Anecdotes* (1883); *Gordon Anecdotes* (1885); *Livingstone Anecdotes* (1886); *Wonderful Stories of Daring, Peril and Adventure* (1887); and *Victoria, Her Life and Reign* (1887).

MACAULAY, SIR JAMES BUCHANAN: Canadian jurist: b. Niagara, Ont., 1793, Dec. 3; d. Toronto, 1859, Nov. 26. He was an ensign in the British army during the War of 1812, and subsequently studying law was admitted to the bar in 1812. In 1829, he was appointed a judge of the king's bench, from 1849 to 1856 he was chief justice of the court of common pleas, and just prior to his death became judge of the court of error and appeal. He was knighted in 1859.

MACAULAY, *ma-kaw'li*, THOMAS BABINGTON, Lord: 1800, Oct. 25—1859, Dec. 28; b. Rothley Temple, Leicestershire, England; son of Zachary M., W. India merchant and philanthropist, and grandson of the Rev. John M., Presb. minister in w. Scotland. He entered Trinity College, Cambridge, at the age of 18, where he acquired a brilliant reputation both as a scholar and debater. He twice won the chancellor's medal—first 1819, for a poem on *Pompeii*, again 1820, for another on *Evening*, both of which were published. In 1821, he obtained the second Craven scholarship, took the degree B.A. 1822, was shortly after elected a fellow of Trinity, and then applied himself zealously to literature. The periodical to which he first contributed was *Knight's Quarterly Magazine;* for this he wrote several of his ballads, e.g., *The Spanish Armada*, *Moncontour*, and *The Battle of Ivry*, besides essays and critiques. In 1825, he took the degree M.A., and in the same year made his appearance in the *Edinburgh Review* by his famous essay on Milton, the learning, eloquence, penetration, brilliance of fancy, and generous enthusiasm of which, quite fascinated the educated portion of the public. For nearly 20 years he was the popular, perhaps also the most distinguished, contributor to the 'Blue and Yellow.' In 1826, he was called to the bar at Lincoln's Inn, but it does not appear that he practiced. The tide of political agitation was rising high, and M. was borne along with the current. There can be no doubt that M. was an immense accession to the whig party; for he believed in whiggism with a profound sincerity that has never been questioned; and he was able to present the grounds of his belief in a manner so powerful and attractive, that his very opponents were charmed, and almost convinced. In 1830, he entered parliament for the pocket-borough of Calne (which was placed at his service by the Marquis of Lansdowne) in time to relieve him of pecuniary pressure; for his father, who had been deemed worth £100,000, met commercial disaster; his fellowship of £300 a year was to expire 1831, and a minor office yielding £400 a year was swept from him by a change in the ministry. Meanwhile his two sisters were dependent on him. M. was even in such straits that he had to sell his Cambridge gold medal. His entrance into parliament was also in time to take part in the memorable struggle for reform, in favor of which he made several weighty and effective speeches. When the first reformed parliament assembled 1832, M. sat as member for Leeds, and at once took a prominent position in the house. He was now made sec. of the board of control for India; and in the following year, went out to India as member of the supreme council, at a salary of £10,000 a year, of which he calculated to save £6,000. In India he remained till 1838. His chief labor was the preparation of a new Indian penal code. A conspicuous feature of this code was its humane consideration for the natives (which drew down on its author the

hostility of the Anglo-Indians). On his return to England, he resumed his political career, and was elected M.P. for the city of Edinburgh 1839. In 1840, he was appointed war-secretary. While holding office, he composed, appropriately, those martial ballads, the *Lays of Ancient Rome* (1842); and in the following year, published a collected series of his *Essays*, 3 vols. In 1846, he was made paymaster-general. M. had always been one of the most courageous and unflinching advocates of religious freedom: accordingly he had defended the Rom. Cath. Relief Bill; his first speech in the house of commons was in support of the bill to repeal the civil disabilities of the Jews, and now he supported the Maynooth grant. At this period, unfortunately for M., Edinburgh was the arena of great ecclesiastical ferment; and because he advocated a measure intended to moderate the natural discontent of Rom. Catholics, he was ousted from his seat at the general election 1847. Five years later (1852), Edinburgh did what it could in the way of reparation, by re-electing M. without a single movement made by him on his own behalf. In 1848, appeared the first two vols. of his *History of England from the Accession of James II.*, the popularity of which must have made even successful novelists envious; next year, he was chosen lord-rector of the Univ. of Glasgow, on which occasion he received the freedom of the city. When the third and fourth vols. of his *History* were published 1855, they occasioned a furor of excitement among publishers and readers, 'to which,' it is said, 'the annals of Paternoster Row hardly furnish any parallel.' Within a generation after the publication of his *History*, more than 140,000 copies were sold in Britain; besides vast numbers in the United States, and many editions in France and Germany. In 1857, the French Acad. of Moral and Political Sciences made him a foreign associate; and in the course of the same year, he was raised to the peerage of Great Britain under the the title Baron M. of Rothley. His health, however, had long been failing, with irregularity of the heart's action, and in a little more than two years he died somewhat suddenly at his residence, Holly Lodge, Campden Hill, Kensington, London. He was buried in Westminster Abbey. Vol. V. of his *History*, a fragment, was published 1861, and a complete ed. of his works, by his sister, Lady Trevelyan, appeared 1866. *The Life and Letters of Lord Macaulay*, by his nephew, George Otto Trevelyan, M.P., a fascinating biography, was published 1876.

M. was indisputably a man of splendid talent, as well as of the purest sentiments and of an unvarying moral tone whether in private or in public life. As a social conversationist he was not excelled in his time. His scholarship—in the strictly classical sense of the term—was admirable; his miscellaneous literary acquisitions were prodigious; his knowledge of modern European, and especially of English history from the age of Henry

VIII. down to his own, was unsurpassed—even unequalled; in addition, he had a sagacity and swiftness of understanding that enabled him to comprehend and rapidly methodize his vast array of facts; and with this he had a wonderful style glittering with rhetorical riches, and exhibiting the last degree of literary finish. In ease, purity, grace, force, and point, he rivals those who have made felicity of style their chief study. He has been accused of partiality, of exaggeration, and of gratifying his passion for epigram at the expense of truth; his *History* has been termed a 'huge Whig pamphlet;' and strong exception has been taken to particular passages, where his views appear to some to be biased by personal antipathies, e.g., his description of Scotland, the Highlands, the massacre of Glencoe, Marlborough, Penn, etc.; but the essential truth and accuracy of his narrative, as a whole, have never been disproved. It is not, however, to be denied that his tendency was to an assured, unqualified, indisputable expression on points which might well have received more moderated utterance.

MACAU'LEY, CATHARINE E.: see MERCY, SISTERS OF.

McAU'LEY, JEREMIAH (JERRY): 1839–84: b. Ireland. He came to America at the age of 13, grew up in vice, became a professional thief, and for highway robbery was sent to Sing-Sing prison. Under the influence of a fellow convict who had become reformed and begun a Christian course, McA. also became a Christian convert. He received a pardon, and went to work in reforming his old associates in New York—opening a place called 'The Helping Hand for Men.' For several years, his daily and nightly meetings gathered multitudes of vicious men, to whom he preached and talked with utmost simplicity, and many of whom he won to Christian faith. In 1882 he established the 'Cremorne Mission' for degraded women. He was uneducated, but had a persuasiveness born of experience; and some of the most eminent people in New York, seeing the results of his work, became his constant helpers.

MACAW, n. *mă-kaw'* [word of unknown origin, possibly from the native name in Guiana or in the Antilles], (*Macrocercus*): genus of the parrot family (*Psittacidæ*), distinguished by a very long wedge-shaped tail, long and pointed wings, large strong feet, the sides of the head naked, the bill short and very strong, the upper mandible greatly arched, and having a long sharp tip, the lower mandible much shorter, and of massive thickness. The species, 15 or more, are among the largest and most splendid of the parrot race; all are natives of tropical America. They do not readily learn to articulate, their attainments seldom exceeding one or two words, but are easily domesticated, and become much attached to those with whom they are well acquainted. Their natural notes

are hoarse and piercing screams. They are more or less gregarious, and the appearance of a flock of macaws in bright sunshine is wonderfully brilliant. They breed twice a year, and lay their eggs—generally two—in the hollows of decayed trees. They feed chiefly on fruits and seeds; and often commit great depredations on fields of maize. One of the flock is set to watch on some elevated situation, and on the approach of danger, gives the alarm by a cry. In domestication, macaws readily eat bread, sugar, etc.—The GREAT SCARLET MACAW (*M. aracanga*) is sometimes more than three ft. in length, including the long tail.—The GREAT GREEN MACAW (*M. militaris*) and the BLUE AND YELLOW MACAW (*M. ararauna*) are rather smaller. These are among the best known species. Allied to the macaws, but approaching to the parrakeets, are the species forming the genus *Psittacara,* also natives of the new world. The cheeks are feathered, and the bill less arched than in the true macaws.—Allied to them are also the Araras, of which one, the CAROLINA ARARA, or CAROLINA PARROT (*Arara Carolinensis*), extends much further north in America than any other of the parrot family. It is about 14 inches long, gay with green and gold, is gregarious, and commits great depredations in orchards and maize-fields. It cannot be taught to articulate words, but readily becomes very familiar.

MACAW-FAT: palm-oil obtained from the crushed fruit of *Elăis quinĕĕnsis,* and *E. melanōcŏc'că,* ord. *Palmæ.*

MACAW'-TREE, GREAT, or MACAW-PALM (*Acrocomia sclerocarpa*): palm of the same tribe with the cocoa-nut; native of the W. Indies, and of the warm parts of America. It is called *Macoya* in Guiana, and *Macahuba* in Brazil. It is 20 to 30 ft. high, with pinnated leaves 10 to 15 ft. long. The fruit yields an oil, of yellow color, of the consistence of butter, with sweetish taste, and an odor of violets, used, in the native regions of the tree, as an emollient in painful affections of the joints, and extensively exported to w. Europe, where it is sometimes sold as *Palm Oil,* to be used in the manufacture of toilet-soaps.

MACBETH, *mak-bĕth'* (or MACBEATHAD or MACBEDA MAC FINNLAECH, as he is called in contemporary chronicles): King of Scotland (reigned 1040-57); d. 1057, Aug. 15; immortalized by the genius of Shakespeare. From his father, Finnlaech, or Finlegh, son of Ruadhri, he inherited the rule of the province of Moray; and he became allied with the royal line by his marriage with Gruoch MacBoedhe, granddaughter of King Kenneth MacDuff. In 1039, he headed an attack on King Duncan MacCrinan, at a place called Bothgouanan (the 'Smith's Bothy'), where the king was mortally wounded, but survived to be carried to Elgin, in Moray. Macbeth then ascended the throne, and his reign of 17 years is commemorated in the chronicles as a time of plenty. He

made grants to the Culdees of Loch Leven, and 1050, went in pilgrimage to Rome. Malcolm MacDuncan, or Ceanmore, eldest son of King Duncan MacCrinan, had fled to England on his father's death; and, in the summer of 1054, his kinsman, Siward, Earl of Northumberland, led an English army into Scotland against Macbeth. That king was defeated with great slaughter, but escaped from the field and still kept the throne. Four years afterward he was again defeated by Malcolm MacDuncan, and fleeing northward across the mountain-range since called the Grampians, he was slain at Lumphanan, Aberdeenshire. His followers were able to place his nephew, or step-son, Lulach, on the throne; and his defeat and death at Essie, in Strathbogie, 1058, Mar., opened the succession to Malcolm, who, three weeks afterward, was crowned at Scone. This is all that is certainly known of the history of Macbeth. The fables which gradually accumulated round his name were systematized in the beginning of the 16th c. by the historian Hector Boece, from whose pages they were transferred to the Chronicle of Hollinshed, where they met the eye of Shakespeare.

McBURNEY, *măk-bėr'nĭ*, CHARLES, A.M.: American surgeon: b. Roxbury, Mass., 1845, Feb. 17. He was graduated at Harvard in 1866; and from the Columbia Medical School in 1870, and has since practised his profession in New York. He was professor of surgery in the College of Physicians and Surgeons, New York, and has been visiting and consulting surgeon at St. Luke's, the Presbyterian, Roosevelt, New York Orthopedic, and other hospitals. When President McKinley was shot, Dr. McBurney was summoned to Buffalo as consulting surgeon.

McCABE, *ma-kāb'*, CHARLES CARDWELL: American Methodist bishop: b. Athens, Ohio, 1836, Oct. 11; d. New York city, 1906, Dec. 19. He was educated at Ohio Wesleyan University. In 1860, he entered the Methodist Episcopal ministry, and in 1862 was appointed chaplain of the 122d Ohio Infantry. At the battle of Winchester he was captured, and held in Libby prison for four months, and soon after his release entered the service of the United States Christian Commission and succeeded in raising a large amount of money for its work. Later he became financial agent for Wesleyan University; and in 1884 was made secretary of the Methodist Episcopal Missionary Society. He was remarkably successful in raising large amounts of money for missionary purposes. He became a bishop of his church in 1896, and in 1902, Dec., was elected chancellor of the American University at Washington, D. C.

McCABE, *ma-kāb'*, EDWARD, D.D., Cardinal: 1816, Feb. 14—1885, Feb. 10; b. Dublin. He was educated at Maynooth College; ordained Rom. Cath. priest 1839; and became sec. to Cardinal Cullen, member of the Chapter

of Dublin, vicar-gen., domestic prelate, member of the senate of the Royal Univ. of Ireland, bp. and asst. to Cardinal Cullen 1877, abp. of Dublin 1879, and cardinal priest 1882. He took strong grounds against the Irish 'Land League,' but his chief public work was in the educational institutions of the Rom. Cath. Church in Ireland, in which he did excellent service.

MACCABEES, n. plu. *măk'kă-bēz* [doubtfully derived by some from *M. C. B. I.*, initial letters of the Heb. words signifying, 'Who is like unto Thee among the gods, O Jehovah?' which was their motto]: heroic Jewish family who freed their nation from the oppression and persecution of the Syrians, and restored the worship of the God of Israel, B.C. 164. MAC'CABEAN, a. *-bē'ăn*, pertaining to the Maccabees. *Note.*—Some, including Dean Stanley, derive the word from Heb. *makkâbâh*, 'a hammer,' giving a sense somewhat like that in which Charles *Martel* derived his surname from his favorite weapon; the family name of the *Maccabees*, however, was *Asmonœans* — see Smith's Dict. of Bible. — The founder of the Maccabean dynasty, MATITHJAHU (Asamonaios, Chashmonaj), a priest (not, as generally supposed, a high-priest, nor even of the family of high-priests), was the first who made a stand against the persecutions of the Jewish nation and creed by Antiochus Epiphanes. (His name is commonly written Mattathiah or Mattathias.) At the beginning of the troubles, he had retired, with his five sons, Jochanan (Gaddes—Kaddish), Simon (Tassi — Mathes), Jehudah (Makkabi), Eleazar (Avaran—*Syr.* Chavin), Jonathan (Apphus), to Modiin, a small place between Jerusalem and Joppa, to mourn in solitude over the desolation of the holy city and the desecration of the temple. But the Syrians pursued him thither. He being a person of importance, Apelles, a Syrian captain, endeavored to induce him, by tempting promises, to relinquish his faith, and to embrace the Greek religion. He answered by slaying with his own hand the first renegade Jew who approached the altar of pagan idolatry. This gave the sign to a sudden outbreak. His sons, with a handful of faithful men, rose against the national foe, destroyed all traces of heathen worship, already established in Modiin and its neighborhood, and fled into the wilderness of Judah. Their number soon increased; and they were able to make descents into the adjacent villages and cities, where they circumcised the children, and restored everywhere the ancient religion of Jehovah. At the death of Mattathiah, B.C. 166, a few years after the outbreak, JUDAH MAKKABI (B.C. 166-161) took command of the patriots, and repulsed the enemy notwithstanding his superior force, at Mizpah (6,000 against 70,000), Bethsur (10,000 against 65,000), and other places; reconquered Jerusalem, purified the temple (Feast of Reconsecration — Chanuka), and re-inaugurated the holy service B.C. 164. Having further concluded an alliance with the

Romans, he fell in a battle against Bacchides B.C. 161. His brother JONATHAN, who succeeded him in the leadership, renewed the Roman alliance, and taking advantage of certain disputes about the Syrian throne, rendered vacant by the death of Antiochus, acquired the dignity of high-priest. But Tryphon, guardian of the young Prince Antiochus Theos, fearing his influence, invited him to Ptolemais, and had him there treacherously put to death. SIMON, the second brother, was elected by the Jewish commonwealth as chief of the national govt., and was formally recognized both by Demetrius, Tryphon's antagonist, and by the Romans as 'chief and ruler of the Jews.' He completely re-established the independence of the nation, and the year after his succession, B.C. 141, was made the starting-point of a new era. The almost absolute power in his hands he used with wise moderation; justice and righteousness flourished in his days, and 'Judah prospered as of old.' But only seven years after his accession to the supremacy, he was foully murdered, B.C. 136, by his son-in-law, Ptolemy, who vainly hoped to succeed him.—For the subsequent history of this family, see JEWS: HYRCANUS: HEROD. The Feast of the Maccabees—i.e., both of the sons of Mattathiah, and of the seven martyr children (II Macc. 7)—is in the Roman martyrology under the date of Aug. 1.

MAC'CABEES, BOOKS OF: certain apocryphal writings of the Old Testament, treating chiefly of the history of the Maccabees (q.v.). They are usually divided into four parts, or books; the first of which—the most important—comprising the period B.C. 175–135, relates the events which took place in Judæa; Antiochus IV. Epiphanes' misdeeds against the temple, the city, and the nation (i.–ii.); the rising of Mattathiah and his sons against the oppressor, the heroic deeds of Judah Maccabeus (iii.–x.), of Jonathan (ix.–xii.), and of Simon, until the election of Johannes Hyrcanus to the dignity of high-priest. The account, which bears the aspect of strict truthfulness, proceeds chronologically after the Seleucidian era. According to Origen and Jerome, this book was originally written in Hebrew. The author, probably a Palestinian, composed it partly from traditions, partly from official documents, after the death of Simon, during the high-priesthood of Johannes Hyrcanus, and it was shortly afterward translated into Greek, Syriac, and Latin. The second book contains—1. Two letters from the Palestinian to the Egyptian Jews, inviting them to celebrate the feast of the Reinauguration of the Temple (Chanukah), (i.–ii.); and 2. An extract, with introduction and epilogue, from the five Books of the Maccabees, by Jason of Cyrene. This second portion begins with the spoliation of the temple by Hesiodorus, under Seleucus Philopator, and ends with the death of Nicanor; thus embracing the period B.C. 176–161. The two letters are spurious, and of a

late date; and the extract from Jason's work—to a great extent, only an embellished repetition of the first Book of the M., of a partly moralizing, partly legendary nature—contains many chronological and historical errors, and bears altogether the stamp of being written for merely didactic purposes. The date both of the original and the extract are very uncertain, but the latter does not seem to have been made before the middle of the first c. B.C.

These two Books (*Sifre Chashmonaim*) are the only Maccabean books received in the Vulgate, and declared canonical by the councils of Florence and Trent, and translated by Luther: they are among the Apocrypha in the English Bible. The third and fourth, however, appear to have been altogether unknown to the western church. The third treats of an anti-Maccabean incident: the miraculous salvation of the Jews in Egypt whom Ptolemæus Philopator (B.C. 221–204) tried to force into idolatry. The style and general contents of this book point to an Alexandrine Hellenist as the author or compiler (about B.C. 200); some investigators (Ewald, Grimm), however, are of opinion that the whole is a poetical invention, intended as a typical description of the circumstances of the Jews under Caligula. It is usually included in editions of the Septuagint; and, with the fourth and fifth books is found in the Syriac, but has no place in Latin Bibles. The fourth book, wrongly supposed to be identical with Josephus's *Supremacy of Reason*, contains, chiefly, the martyrdom of Eleazar and the seven brothers, and also is probably the work of an Alexandrine Jew living in Egypt—perhaps at the time of Herod the Great—and belonging to the Stoic school. Declamations, dialogues, monologues, and the like, are frequent, and impart to the book the character of a most artificial and strained composition. It appears in some MSS. of the Septuagint, notably in the Sinaitic and the Alexandrian (the Vatican codex does not contain any of the Maccabean books). There is also a so-called fifth book of M. found in the Polyglot; but only the Arabic and Syriac versions, not the Greek original—the unique MS. of which is supposed to have perished—are extant. See Apocrypha: Bible.

McCALL, *ma-kawl'*, George Archibald: 1802, Mar. 16—1868, Feb. 26; b. Philadelphia: soldier. He graduated at the U. S. Milit. Acad. 1822; entered the army as 2d. lieut. of inf.; promoted 1st. lieut. 1829, capt. 1836, maj. 1847; brevetted maj. and lieut.col. for gallantry in the Mexican war; appointed inspector gen. and col. U.S.A. 1850; and resigned 1853. In 1861, May, he was commissioned maj.gen. Penn. vols. and brig.gen. U.S.A.; commanded the Penn. reserve corps 1861–2; planned and executed the occupation of Dranesville 1861, Dec. 20; commanded in the battle of Mechanicsville and defeated a superior force 1862, June 26; present at Gaines's Mill; was captured at Frazier's Farm June 30, and confined in Libby prison till exchanged Aug.; and resigned from the army through impaired health 1863, Mar. 31.

McCAL'LA, Bowman Hendry: American naval officer: b. Camden, N. J., 1844, June 19. He was graduated at the United States Naval Academy in 1864, and rose by promotion through the ordinary grades to captain in 1898. In 1890, he was court-martialed on charges of cruelty to his subordinates and was suspended for three years, but in consideration of previous acts of gallantry was restored to active service in 1891. He commanded the Marblehead during the war with Spain in 1898 and was subsequently restored to the place he held on the list of officers previous to his suspension. In 1899, he commanded the Newark and aided in the pacification of the Philippines. In 1900, he co-operated with Vice-Admiral Seymour in putting a stop to the Boxer troubles at Peking in a manner which gained him the congratulations of the Navy Department. In 1901, he was given command of the Kearsarge; was commandant of the naval training station at San Francisco 1902-3; and was in charge of the Mare Island Navy Yard 1903-6. He was promoted rear-admiral 1903, Oct. 11, and retired 1906, June 19.

MACCALUBA, *mâk-kâ-lô'bâ:* interesting mud-volcano or air-volcano of Sicily, not far from the road between Girgenti and Aragona. It is known to have been in frequent activity for the last 15 centuries. It consists of a large truncated cone of barren argillaceous earth, elevated about 200 ft. above the surrounding plain, with wide cracks in all directions, and numerous little hillocks with craters, which at times emit a hollow rumbling noise, and throw up a fine cold mud mixed with water, a little petroleum and sulphureous gas. Reports like the discharge of artillery are occasionally heard; slight local earthquakes are felt, and mud and stones are thrown to a height of 30 ft. or more.

McCAM'MON, Joseph Kay: American lawyer: b. Philadelphia, 1845, Oct. 13; d. 1907, Jan. 2. He was graduated at Princeton in 1865; studied law in Philadelphia; became register in bankruptcy in 1870; was special counsel of the United States in Washington 1871; president of the board for investigation of the Indian service 1877; assistant attorney-general of the United States 1880-5; and in 1881 was appointed United States commissioner of railroads. Under Presidents Garfield and Arthur, he conducted treaties with various Indian tribes. Among his writings are a *Report on Indian Service* (1878); *Report of Councils with Bannock and Shoshone Indians* (1881); *Report of Councils with Flathead and Other Indians* (1882); *Arguments in Cases Affecting Pacific and Other Railroads.*

McCAR'THY, *mak-kâr'thĭ*, Justin: author: b. Cork, Ireland, 1830, Nov. 12. He received a superior classical education; became a reporter on a Liverpool newspaper 1853, parliamentary reporter on the London *Morning Star* 1860, and its chief editor 1864; spent 1868-70 trav-

elling, writing, and lecturing in the United States; became a radical leader writer on the London *Daily News* 1870; elected member of parliament 1879, 80, 85, and 86 and 92; and revisited the United States 1886-7. His publications include contributions to American and English reviews and magazines, and *The Waterdale Neighbors* (1867); *My Enemy's Daughter* (1869); *Lady Judith* (1871); *A Fair Saxon* (1873); *Linley Rochford* (1874); *Dear Lady Disdain* (1875); *Miss Misanthrope* (1877); *Donna Quixote* (1879); *The Comet of a Season* (1881); *Maid of Athens* (1883); and *Camiola* (1885), all novels; *A History of Our Own Times,* 2 vols. (1878-80, new ed. 1905); *The Epoch of Reform* (1882); and a *History of the Four Georges,* 4 vols. (1884-9); *Life of Sir Robert Peel; Life of Pope Leo XIII.; The Story of Wm. Gladstone's Life* (1898); *Modern England* (1898); *Reminiscences* (1899); *The Reign of Queen Anne* (1902); *Portraits of the Sixties; The Story of an Irishman* (1904); etc. He was a Home-Ruler, and chairman of the Irish parliamentary party 1890, Dec. 6—1896, Jan.

McCARTHY, Justin Huntley: Irish journalist and author: b. 1860. He was graduated at University College and in 1884 was elected to parliament. He has been a prolific and versatile author, following in the footsteps of his father, Justin McCarthy (q.v.). Among his works are *Outline of Irish History* (1883); *Serapion, and Other Poems* (1883); *England Under Gladstone* (1884); *Camiola, a Girl with a Fortune* (1885); *History of the French Revolution* (1897); *The Proud Prince* (1903); *The Dryad* (1905); etc. He has also written plays, such as *The Candidate; The White Carnation; If I Were King;* etc.

McCAUL, *ma-kâl',* John: Canadian scholar: b. Dublin, Ireland, 1807. He was elected president of Toronto University in 1849 and was interested for many years in educational matters in Canada. He edited Horace, Longinus, Lucian and Thucydides as college text-books, and among his valuable archæological works are *Britanno-Roman Inscriptions* (1863); and *Christian Epitaphs of the First Six Centuries.*

MacCAULEY, *ma-kâl'ĭ,* Clay, A.M.: American Unitarian clergyman and author: b. Chambersburg, Pa., 1843, May 8. He was graduated at Princeton in 1864, and at the Theological Seminary of the Northwest, Chicago, in 1867, and read philosophy and divinity at Heidelberg, 1872. In the civil war, 1862-3, he was a lieutenant in the 126th Pennsylvania regiment, and served on the staff of Gen. S. D. Sturgis, and in 1864-5 was a member of the Christian Commission in the United States army. In 1880-1, he was a collaborator of the Bureau of Ethnology among Indians east of the Mississippi. Entering the Unitarian ministry, he was pastor of the First Church, Waltham, Mass., 1869-72, and of All Souls

Church, Washington, D. C., 1876-81. From 1890 to 1900 he served as director of the Japan mission of the Unitarian Association, and from 1891 to 1899 was president of the College for Advanced Learning at Tokyo and professor there of philosophic and historic theology. He has written: *Christianity in History* (1891); *The Religious Problem of Japan—How Solve It?* (1894); *Introductory Course in Japanese* (1896); *Japanese Literature* (1899); *A Day in the Very Noble City, Manila* (1899); *Present Religious Conditions of Japan* (1902); etc.; and has published *Single Songs of a Hundred Poets* (1899), and other translations from the Japanese.

McCAUSLAND'S RAID: an incursion of the Confederate general McCausland into Maryland and Pennsylvania, the chief incident of which was the burning of Chambersburg, Pa. Gen. Early having defeated Gen. Crook in the battle of Kernstown 1864, July 24, and driven him and Averell across the Potomac at Williamsport, ordered Gen. McCausland with his brigade and that of Bradley T. Johnson, with four guns, in all about 2,500 men, across the Potomac to raid Pennsylvania and then move to Cumberland, Md., to destroy the machinery of the Cumberland coal-pits and the repair-shops, stations, and bridges of the Baltimore & Ohio railroad. The sum of $100,000 in gold, or $500,000 in currency, was to be demanded of it, in default of which McCausland was ordered to burn the town. Under cover of demonstrations at Williamsport and other points along the Potomac, McCausland crossed the river at McCoy's Ferry, near Clear Spring, above Williamsport, on the 29th, and made straight for Chambersburg, about 25 miles northeast. He met with but little opposition and, on the morning of the 30th, rode into the fated town and demanded the sum fixed by Early. It could not immediately be raised; he knew that Gen. Averell was close upon him; and setting fire to the place, laying a greater part of it in ashes, he hastily marched westward to McConnellsburg and encamped. Averell, who was in Hagerstown when he heard that McCausland had crossed the Potomac, started in pursuit with about 2,600 cavalry, went through the burning town and, a few miles from McConnellsburg, struck McCausland's rear, diverting him from his intended march on Bedford and forcing him back to the Potomac at Hancock, which was reached by noon of the 31st. Here McCausland formed for battle, but upon Averell's appearance and prompt attack he withdrew westward by the National road to Cumberland, where, Aug. 1, he found Gen. Kelley to oppose him, whom he attacked in the afternoon, and skirmished until night, when he retreated toward Old Town, on the Potomac, leaving 30 of his killed and wounded on the field. At Old Town he forced a crossing at daylight, Aug. 2, capturing or dispersing a regiment of new troops from Ohio, and then moved south into the Valley of the South

Branch of the Potomac, by way of Springfield and Romney. From Romney, Aug. 4, he moved on New Creek and attacked the garrison, but after a stubborn fight was repulsed, leaving 25 dead on the field, the Union loss being 36 killed and wounded. McCausland then withdrew to near Moorefield and went into camp. Averell crossed the Potomac on the 4th, and, after a forced march through Bath, Springfield, and Romney, before sunrise of the 7th surprised McCausland in his camp and routed him, capturing his four guns, nearly all his wagons, several hundred horses, three battle-flags, many small arms, and 420 prisoners, including 38 officers. McCausland's loss in killed and wounded was about 100. Averell's loss was 41 killed and wounded. McCausland's shattered command fled to the mountains, and made its way in squads to the Shenandoah Valley, finally assembling at Mount Jackson.

MacCHES'NEY, Clara T.: American artist: b. Brownsville, Cal., 1861. She studied at the San Francisco Art School, at the Gotham Art School, New York, and at the Colarossi School in Paris. Her genre work has received favorable recognition. At the World's Columbian Exposition in 1893 she was awarded two medals and she received the Dodge prize, New York, in 1894. Since then she has also received three medals from the Colarossi School, a gold medal from the Philadelphia Art Club, and the second Hallgarten prize from the National Academy of Design, New York. At the Paris Exposition of 1900 she exhibited *Pomegranates* and *The Old Blind Fiddler*. She also exhibited at the Pan-American Exposition, Buffalo, N. Y., 1901, and at the Louisiana Purchase Exposition, St. Louis. Mo., 1904.

McCHESNEY, Dora Greenwell: American author: b. Chicago, 1871, Oct. 1. She was privately educated, chiefly by her mother, in whose company she travelled and read widely, making special acquaintance with German literature, Italian art, and Roman antiquities, also becoming deeply interested in studying the English civil war, with characters and incidents of which her writings largely have to do. Among these are: *Kathleen Clare, Her Book, 1637-1641* (1895); *Miriam Cromwell, Royalist: a Romance of the Great Rebellion* (1897); *Beatrix Infelix: a Summer Tragedy in Rome* (1898); *Rupert, by the Grace of God: the Story of an Unrecorded Plot* (1899); *Cornet Strong of Ireton's Horse; Yesterday's Tomorrow;* etc.

MACCHIAVEL'LI, Nicolo di Bernardo dei. See Machiavelli.

McCLELLAN, *mak-klĕl'an*, George Brinton: soldier: 1826, Dec. 3—1885, Oct. 29; b. Philadelphia; son of George McClellan, eminent surgeon and one of the founders of Jefferson Medical College. In 1840, he entered the Univ. of Pennsylvania; 1842 the Military Acad. at West

Point; 1846 graduated second in a large class, Stonewall Jackson, Reno, Pickett, Maury, and Stoneman being among his classmates. As brevet second lieutenant of engineers he aided in organizing a company of sappers and miners, with whom he proceeded to the seat of war in Mexico, 1846, Sep. He distinguished himself by his combined engineering skill and bravery at Vera Cruz, Cerro Gordo, Contreras, and the assault on the City of Mexico; was brevetted first lieutenant at Contreras 1847, Aug. 20; and captain at the capture of Mexico, 1847, Sep. 13. He was appointed to a professorship at West Point 1848, June 22; where he prepared a lecture on Napoleon's campaign of 1812, and in 1849-50 adapted Gomard's *Manual of Bayonet Exercise* from the French, which was made part of the system of instruction. 1851-2 he assisted in the construction of Ft. Delaware; 1852, went with Captain Marcy to the Red river, and surveyed the rivers and harbors of Texas; 1853, helped in the Pacific railroad surveys. For other important service he was made captain of cavalry, 1855, Mar. 5, and sent with two others to Europe, during the Crimean war, to report on the military systems of Europe; his report on *The Armies of Europe* was published by order of congress, 1861, Oct. He resigned from the army and became engineer, and afterward vice-president of the Illinois Central railroad. In 1860, he married Ellen Marcy, and became president of the Ohio & Mississippi railroad. When the civil war began he was made maj.gen. of the Ohio militia, and soon afterward appointed by Lincoln maj. gen. in the regular army. A brisk, successful campaign in West Virginia led to his appointment as commander of the department of the Potomac after the disastrous battle at Bull Run, 1861, July 21. He fortified Washington, reorganized the army, and matured comprehensive plans for crushing the rebellion. Delays in carrying these out made the people and administration impatient. In spring, 1862, he invaded Virginia, advanced by the peninsula of the James river near to Richmond, was defeated in a series of battles, and finally abandoned the campaign, and was virtually relieved of his command; but Pope being utterly defeated at the second battle of Bull Run, and Washington threatened, 1862, Aug. 29, he was again called to the command, once more reorganized the demoralized army, advanced against Lee, defeated him at Antietam, 1862, Sep. 17, and drove him back into Virginia, though he was criticised for allowing Lee's army to escape. In Nov. the command was again taken from him. 1864 he consented to be the democratic candidate for the presidency against Lincoln. He received only 21 electoral votes, Lincoln receiving 212. In 1865, he went to Europe, where he remained till 1868, when he returned to live in Orange, N. J. In 1870, he became chief engineer of the docks, New York, and supervised the construction of the Stevens battery. He was also

pres. of the N. Y. Underground railroad, the U. S. Rolling Stock Co., and the Atlantic & Great Western railroad. In 1877, he was elected gov. of N. J., which office he administered with exceptional ability. He died at Orange of neuralgia of the heart, and was buried at Trenton, New Jersey.

McCLELLAN, George Brinton, A.B., A.M., LL.D.: American politician: b. Dresden, Saxony, 1865, Nov. 23. He is the son of General G. B. McClellan (q.v.). He was graduated from Princeton in 1886; and took up journalism, working as a reporter and in editorial positions for several of the New York city dailies. He studied law, and was admitted to the bar in 1892. From 1889 to 1892 he was treasurer of Brooklyn Bridge. Early active in politics as a democrat, he was elected to the board of aldermen, and was president of that board in 1893 and 1894. He was elected to congress in 1894, and for four succeeding terms, and was a member of the House Committee of Ways and Means. In congress he was an advocate of tariff reform and free trade, and though opposed to an imperialistic policy, did not sympathize with the attacks on the conduct of the United States army in the Philippines. In 1903, he was nominated for mayor of Greater New York by the regular democratic organization (Tammany Hall), and after a vigorous campaign in which he took active part, was elected by 63,000 majority. He was re-elected in 1905.

McCLERNAND, *ma-klĕr'nand,* Edward John: American soldier: b. Jacksonville, Ill., 1848, Dec. 29. In 1870, he was graduated at West Point and stationed on the western frontier for the nine following years, in which he did rescue work after the destruction of Custer's command, and had a share in the capture of Chief Joseph and the Nez Percés Indians. In 1898, he was appointed lieutenant-colonel and adjutant-general of volunteers, served with the Army of Santiago de Cuba in 1898, and was ordered to the Philippine Islands, where he routed the insurgents at Cebu, 1900, Jan. 8. He was in command of the 2d district in the Department of the Visayas, including the islands of Cebu, Mactan, Baulayan and the Camotes, from 1900-1; was adjutant-general Department of Missouri 1901-3; chief of staff Northern Division 1904-5; attaché with Japanese army in Japan and Manchuria 1905; and has commanded the 1st U. S. Cavalry since 1906, Sep. 27.

McCLERNAND, *mak-klĕr'nand,* John Alexander: b. Breckenridge co., Ky., 1812, May 30; d. Springfield, Ill., 1900, Sep. 20. On the death of his father, 1816, he removed with his mother to Shawneetown, Ill., on the Ohio river, where he passed his early youth working on a farm. In 1829, he began to study law, and 1832 was admitted to the bar. The same year he served as a private in the campaign against the Sacs

and Foxes under Black Hawk, in which the Indians were defeated in a battle near the Wisconsin river, Aug. 2. Returning, he engaged in mercantile pursuits; 1835 he established the Shawneetown *Democrat,* and at the same time resumed the practice of law. He represented his district in the legislature 1836-40, and 1843 went to congress, serving until 1851, when he removed to Jacksonville. 1859, Dec. 5, he again went to congress, and served till the outbreak of the civil war, when he resigned, and with John A. Logan and Phil. B. Fouke raised the McClernand brigade, of which he was made commander, being commissioned brigadier-general 1861, May 17. He led his brigade at the battle of Belmont, 1861, Nov. 7, but was outnumbered and defeated. At the assault of Ft. Donelson, 1862, Feb., he commanded the right of the Federal forces; and on Mar. 21 was made major-general, and led his division at Shiloh, Apr. 6 and 7, when the confederates under Johnston and Beauregard were forced to retreat. 1863, Jan. 4, he superseded Sherman in command of the expedition against Vicksburg, until relieved by Grant, the commander of the forces. Jan. 11, his command took Arkansas Post, with a number of prisoners and large quantities of commissary stores. May 12, he distinguished himself on the Big Black river; and after the battle of Champion Mills, May 16, when in forcing back the Confederates upon the Big Black river, his corps and that of McPherson suffered heavily. The Confederates lost 17 guns, and were forced to retreat to Vicksburg. McClernand led the 13th army corps until relieved, 1863, July, and resigned his commission, 1864, Nov. 30, and retired to private life. In 1870, he was appointed circuit judge for the Sangamon, Ill., district. He presided at the national democratic convention in St. Louis, 1876, and was appointed by President Cleveland member of the Utah commission.

McCLINTOCK, *ma-klĭn'tok,* Sir FRANCIS LEOPOLD, D.C.L., LL.D., F.R.S.: British naval officer: b. Dundalk, Ireland, 1819, July 18; d. 1907, Nov. 17. He entered the British navy 1831; was promoted lieut. 1845, accompanied Sir James Clarke Ross on the Arctic expedition in search of Sir John Franklin 1848; went with Capt. Horatio Allen on a similar expedition 1850, and besides discovering traces of the Franklin party made a sledge journey of 750 m. along the n. shore of Parry Sound; was promoted commander 1851; commanded the *Intrepid* in Sir Edward Belcher's expedition 1852, rescued Capt. M'Clure and his companions after three years' imprisonment in the ice near Melville Bay, made a sledge journey of 1,210 m. into the unexplored region n. of Melville Bay, and had to abandon his own vessel. He was promoted captain 1854. In 1857, he commanded the search expedition fitted out by Lady Franklin, and discovered a record announcing the death of Sir John Franklin and the abandonment of the *Erebus* and *Terror.* On his return he was knighted

and otherwise honored. He was commodore of the Jamaica station 1865-68; naval aide to Queen Victoria 1868-71; rear-admiral 1871; admiral-superintendent Portsmouth dockyard 1872-77; vice-admiral 1877; commander-in-chief N. American and W. Indian stations 1879-82; and full admiral 1884. His *Voyage of the Fox* went through several editions.

McCLINTOCK, *mak-klĭn'tok*, JOHN, D.D., LL.D.: 1814, Oct. 27—1870, Mar. 4; b. Philadelphia. Graduating from the Univ. of Pennsylvania 1835, he was ordained a minister of the Meth. Episc. Church; was prof. in Dickinson College of mathematics 1837-40, of classics 1840-48; ed. of *Methodist Quarterly Review* 1848-56; in 1857, delegate to the Wesleyan Meth. conference in England, and to the Berlin meeting of the Evangelical Alliance; 1857-60, pastor St. Paul's Methodist Episc. Church, New York; 1860-64, pastor American Chapel, Paris, and corresponding ed. of the *Methodist*. In 1864-65, he was again pastor of St. Paul's, New York, resigning because of ill-health; and from 1867 till death he was pres. of Drew Theol. Seminary, Madison, N. J. Dr. McClintock was deemed the leading scholar in his denomination; he was an admirable preacher, and socially genial and attractive. He was joint founder and editor of McClintock and Strong's *Cyclopedia of Bib., Theol., and Eccles. Literature* (9 vols. Harper & Bros.), of which 3 vols. were issued before his death. Among his writings are: *Analysis of Watson's Theol. Institutes*, New York (1842); *Temporal Power of the Pope* (1855); and several translations of important works. Since his death, have been issued his sermons entitled *Living Words* (New York 1871, 2d ed.); *Lectures on Theological Encyclopædia and Methodology* (Cincinnati 1873). He wrote much also for periodicals.

McCLOSKEY, *ma-klŏs'kĭ*, JOHN, D.D., Cardinal: 1810, Mar. 20—1885, Oct. 10; b. Brooklyn, N. Y. His secondary and collegiate studies were made at Mount Saint Mary's College, Emmitsburg, Md., and his post-graduate studies in France and Rome. At 24 he was ordained priest and on returning to America was assigned to Saint Joseph's Church, New York city. When Saint John's College, at Fordham (now a part of New York city), was opened in 1841, he was made its first president, but in the next year he returned to parish work. In 1844, he was appointed coadjutor to Bishop Hughes of the diocese of New York, and consecrated titular bishop of Axieren; and three years later was appointed bishop of Albany. He built the Cathedral of the Immaculate Conception at Albany, Saint Joseph's Theological Seminary at Troy, established several new parishes, and founded educational and charitable institutions, including hospitals, orphanages, homes for the aged, and reformatories. He succeeded Archbishop Hughes in the archiepiscopal see of New York 1864, May 6. The result of his labors in

the archdiocese of New York remains his greatest monument. He was made a cardinal in 1875, under the title of Santa Maria supra Minervam. He was in attendance at the Vatican Council (q.v.) and a member of the committee on discipline. He was summoned to Rome 1878, Feb., to attend the conclave for the election of a pope but was too late to cast a vote, Leo XIII. having been elected a few hours before his arrival.

McCLOSKEY, William George: American Roman Catholic prelate: b. Brooklyn, N. Y., 1823, Nov. 10. Upon completing his studies at Mount Saint Mary's College, Emmitsburg, Md., he turned his attention to law, but subsequently changing his mind, entered Saint Mary's Theological Seminary, where he pursued a six years' course in philosophy and theology, being ordained priest 1852, Oct. 6. His first appointment was as assistant in the Church of the Nativity. In 1853, he was named professor of Latin and Sacred Scriptures in Mount Saint Mary's College and in 1857 became director of the theological seminary. When the American College was formally opened in Rome Pope Pius IX. chose Dr. McCloskey its first president, 1859, Dec. 8, a position which, for eight years, he filled to the utmost satisfaction. In 1865, he visited America in the interests of the institution under his charge and succeeded in collecting funds sufficient for its permanent endowment. Upon the death of Bishop Lavialle, Pope Pius IX. appointed Dr. McCloskey to the see of Louisville, Ky., and he was consecrated at Rome 1868, May 24.

McCLURE, *ma-klūr'*, Alexander Kelly, ll.d.: American journalist: b. Sherman's Valley, Perry county, Pa., 1828, Jan. 9. He was reared on a farm, educated at home, and apprenticed to a tanner in 1842, soon after began to write for the *Perry Freeman,* and edited and published the *Juniata Sentinel* at Mifflin, Pa., in the whig interest, 1846-50. He then published (1850-6) the Chambersburg *Repository,* which he made influential in the cause of anti-slavery. He was state superintendent of printing in 1855; a member of the state convention of 1855 which met at Pittsburg to organize the republican party; in 1856, was admitted to the bar, and was a delegate to the first republican national convention in Philadelphia. In 1857-8, he sat in the legislature as a republican, and was state senator in 1859. As leader of the Pennsylvania delegation in the republican national convention of 1860 he aided in the nomination of Abraham Lincoln. In 1862-4, he again published the Chambersburg *Repository,* and in the latter year served as assistant adjutant-general in charge of the draft in Pennsylvania. Two years later he was again a member of the legislature, and in 1868-73 practised law in Philadelphia. He was chairman of the state delegation to the liberal republican convention in 1872, and of the liberal

republican state committee, and in that year entered the state senate. In a close election in 1873 he was defeated as an independent candidate for mayor of Philadelphia. In 1875, he established the Philadelphia *Times*, of which he was editor-in-chief till 1901. He has published *Three Thousand Miles Through the Rocky Mountains; Our Presidents and How We Make Them* (1900); *Recollections of Half a Century* (1901); *To the Pacific and Mexico* (1901); *Old Time Notes of Pennsylvania* (1906); etc.

McCLURE, James Gore King, D.D., LL.D.: American Presbyterian clergyman: b. Albany, N. Y., 1848, Nov. 24. He was graduated at Yale in 1870, at the Princeton Theological Seminary in 1873, and ordained as a Presbyterian minister in 1874. He was settled (1874-9) at New Scotland, N. Y., and was pastor at Lake Forest, Ill., from 1881 to 1905. From 1897 to 1901 he was president of Lake Forest University. Since 1905 he has been president of McCormick Theological Seminary, Chicago. He has written *Possibilities* (1896); *The Man Who Wanted to Help* (1897); *The Great Appeal* (1898); *Environment* (1899); *For Hearts that Hope* (1900); *A Mighty Means of Usefulness* (1901); *Living for the Best* (1903); *The Growing Pastor* (1904); *Loyalty, the Soul of Religion* (1905); etc.

McCLURE, Sir Robert John Le Mesurier: English admiral: b. Wexford, Ireland, 1807, Jan. 28; d. London, 1873, Oct. 17. He began his naval career in 1824, and in 1836 under Sir John Ross made his first voyage to the Arctic regions. Again he joined an expedition sent to discover the North-West Passage in 1848. Two years later he was placed in command of an Arctic expedition and discovered Prince of Wales Strait, which connects the Atlantic and Pacific. On his return he was knighted. From his journals was published *The Discovery of the North-West Passage* (by Captain Sherard Osborne, 1856).

McCLURE, Samuel Sidney, A.M., L.H.D.: American editor and publisher: b. in County Antrim, Ireland, 1857, Feb. 17. He was graduated at Knox College, Galesburg, Ill., in 1882. In 1884, he established a newspaper syndicate which has grown to great proportions and assumed distinctive importance in the publishing world. In 1893, he founded *McClure's Magazine*, and in 1899 established the publishing house of McClure, Phillips & Company, New York. He is also president of the S. S. McClure Company in the same city. Since 1894 he has been a trustee of Knox College.

McCLURG, *ma-klôrg'*, Alexander Caldwell: American publisher: b. Philadelphia, 1834; d. St. Augustine, Fla., 1901, Apr. 15. He was graduated at Miami University, Oxford, Ohio, in 1853; engaged in business with S. C. Griggs & Company, publishers, in Chicago, and in 1862 entered the Union army. He was captain in the

88th Illinois regiment of infantry, rose to the rank of colonel, was made brevet brigadier-general, and in the Atlanta campaign and during Sherman's great march served as chief of staff to the 14th corps. Returning from the war, he was admitted to partnership in the publishing house above mentioned, and some years later established the firm of Jansen, McClurg & Company, afterward A. C. McClurg & Company. The business of the house prospered, and in 1899 the company was reorganized, the co-operative principle adopted, and the employees, among whom the stock was largely distributed, were granted easy terms for increasing their investments.

MacCOLL, *ma-kŏl'*, Evan: Canadian poet: b. Kenmore, Argyleshire, Scotland, 1808, Sep. 21; d. Toronto, 1898. He emigrated to Canada in his forty-second year and became known as the poet of the Scottish colony at Kingston. He wrote with fluency in Gaelic and his *Clàreach nam Beann* created much enthusiasm among his compatriots. He wrote many English poems, such as *My Rowan Tree; The Mountain Minstrel* (1887); and *Poems and Songs* (1888).

McCONNELL, *ma-kŏn'ĕl*, Samuel D., D.D., D.C.L., LL.D.: American Protestant Episcopal clergyman and author: b. in Westmoreland county, Pa., in 1846. He was graduated at Washington and Jefferson College in 1868, and was ordained a priest in 1873; was rector of Saint John's Church, Erie, Pa., 1872-3; held rectorships at Watertown, Conn. (1873-6), and Middletown, Conn. (1876-82); became rector of Saint Stephen's Church, Philadelphia, in 1882; of Holy Trinity Church, Brooklyn, N. Y., in 1896; and since 1902 has been rector of All Souls' Church, New York city. He has published a *History of the American Episcopal Church* (1890); *Sons of God* (1891); *Sermon Stuff* (1888, 1895); *A Year's Sermons* (1896); *The Open Secret; The Next Step in Christianity; Essays, Practical and Speculative* (1900); *The Evolution of Immorality* (1901); etc.

McCOOK, *ma-kûk'*, Alexander McDowell: soldier: b. Columbiana co., Ohio, 1831, Apr. 22; d. Dayton, Ohio, 1903, June 12; son of Maj. Daniel McCook. He graduated at the U. S. Milit. Acad. 1852; entered the army as brevet 2d lieutenant 3d U. S. infantry; was several years engaged against hostile Indians in New Mexico; assistant instructor of infantry tactics in the U. S. Milit. Acad. 1858-61; was promoted 1st lieutenant 1858; appointed colonel 1st Ohio volunteers 1861, Apr.; brevetted major U. S. A. for gallantry at the first Bull Run; promoted brigadier-general volunteers 1861, Sep. 3; commanded a division of the Army of the Ohio at Shiloh and Corinth, the 1st army corps at Perrysville, 20th army corps at Stone river and Chickamauga, the troops defending Washington 1864, July 11-12, and the department of Eastern Arkansas 1865; was brevetted lieutenant colo-

nel U. S. A. for services at Nashville 1862, Mar. 3; colonel for Shiloh, Apr. 7; brigadier-general for Perrysville 1865, Mar. 13; and major-general U. S. A. for field service during the war the same day, and promoted major-general volunteers 1862, July 17. In 1867, Mar., he was promoted lieutenant colonel U. S. A.; 1880, Dec., colonel 6th U. S. Infantry; 1890, July 11, brigadier-general U. S. A.; 1894, Nov. 9, major-general U. S. A. His father and 7 brothers served in the Union army, the father and 3 brothers were killed in action, and 4 of the brothers became generals.

McCOOK', Anson George: soldier: b. Steubenville, Ohio, 1835, Oct. 10; son of John McCook. He received a common-school education, was admitted to the bar 1861; entered the army as captain 2d Ohio infantry; was in the first Bull Run battle; became colonel of his regiment and afterward of the 194th Ohio; commanded a brigade in the Atlanta campaign and the Virginia valley; and was brevetted brigadier-general volunteers for services in the field. He was assessor of internal revenue in Steubenville 1865-73; member of congress from New York 1877-83; and was secretary of the U. S. senate 1884-93; and chamberlain of New York city 1895-7.

McCOOK, Daniel: American soldier: b. Canonsburg, Pa., 1798, June 20; d. near Buffington's Island, Ohio, 1863, July 21. Having received a college education, he removed from Pennsylvania to Ohio and settled at Carrollton. Although 63 years old at the outbreak of the civil war, he entered the Union army, in which he served as major of volunteers. During one of the Morgan raids he received a wound from which he died shortly after. Eight sons of his served as officers in the Federal army, three of whom were killed in battle.

McCOOK', Edward Moody: soldier: b. Steubenville, Ohio, 1833, June 15; son of John McCook. He received a common-school education; was admitted to the bar and settled in Colorado to practice; entered the regular army 1861, May 8, as 2d lieutenant 1st cavalry; was brevetted 1st lieutenant at Shiloh 1862, captain at Perrysville 1862, major at Chickamauga 1863, lieutenant colonel for cavalry operations in e. Tennessee 1864; colonel at Selma, Ala., and brigadier-general for field service during the war 1865; and was promoted brigadier-general volunteers 1864, and major-general volunteers 1865. He distinguished himself by his effective cavalry raids. Resigning his army commission 1866, he was appointed U. S. minister to the Hawaiian Islands, and held the office till 1869; and was governor of Colorado Territory 1869-75.

McCOOK, Henry Christopher, d.d., sc.d., ll.d.: American clergyman and entomologist: b. New Lisbon, Ohio, 1837, July 3. He was graduated at Jefferson College (now Washington and Jefferson) in 1859, studied at the Western Theological Seminary, and in the civil

war he served as 1st lieutenant and chaplain in the 41st Illinois regiment, 1861-2. In 1862-3, he was minister of a church at Clinton, Ill.; from 1863 to 1870 labored in St. Louis as a home missionary; and subsequently became pastor of the Tabernacle Presbyterian Church in Philadelphia, a charge he still retains. He served as chaplain of the 2d regiment of Pennsylvania volunteers in the Spanish-American war, and is chaplain of the Pennsylvania Commandery of the Loyal Legion, president of the American Entomological Society, vice-president of the Academy of Natural Sciences, Philadelphia, and president of the American Presbyterian Historical Association. His writings include: *The Gospel in Nature; The Mound-Making Ants of the Alleghanies* (1877); *The Agricultural Ants of Texas* (1879); *Honey Ants and Occident Ants* (1882); *Tenants of an Old Farm* (1884); *The Women Friends of Jesus* (1885); *American Spiders and Their Spinning-Work* (1889-93); *The Latimers, a Scotch-Irish Historic Romance of the Western Insurrection* (1898); *Martial Graves of Our Fellow Heroes in Santiago de Cuba; The Senator—A Threnody* (1905); *Nature's Craftsmen* (1907); etc.

McCOOK: Neb., city, county-seat of Red Willow county; on the Republican river, and on the Burlington & Missouri River railroad; about 230 miles west by south of Lincoln, the capital of the state. It is in a rich agricultural region. McCook owes much of its prosperity to the fact that it is the headquarters of a railroad division, and has railroad shops. The sugar beet, alfalfa, wheat, and corn are the principal productions of the surrounding farms. A number of cattle are raised and a large number of live stock from Willow county and vicinity is shipped from McCook. Pop. 2,500.

McCORMICK, *ma-kawr'mĭk,* Alexander Hugh: American naval officer: b. in the District of Columbia, 1842, May 9. He was acting midshipman at the United States Naval Academy in 1859; in 1861, Apr., entered into active service, and served in blockading squadrons throughout the civil war. He became captain in 1892. Since the civil war he has performed various sea duties, and has served in the department of mathematics and in that of astronomy and navigation at the Naval Academy. He was inspector of ordnance, 1876-81; made a cruise around the world, 1881-5; was assigned to the ordnance department, 1885-92; to the Asiatic station, 1892-4; was captain of the Norfolk Navy Yard, 1894-7; member of the armor and personnel board, 1897-8; and commandant of the Washington Navy Yard in 1898. In 1899, he was raised to the rank of rear-admiral, and was retired 1900, Mar. 26.

McCORMICK, *ma-kawr'mĭk,* Cyrus Hall: 1809, Feb. 15—1884, Mar. 13; b. Walnut Grove, Va.: manufacturer. He received a common-school education; invented two

plows 1830, and the first practical reaping-machine ever made 1831; removed to Cincinnati 1845, and to Chicago 1847, where he built extensive works and began manufacturing reapers; received numerous prizes and medals for his machine; and was awarded the grand prize of the Paris exhibition; appointed officer of the Legion of Honor, and elected corresponding member of the French Acad. of Sciences for his great aid to agriculture, 1878. He founded the Presb. Seminary of the Northwest in Chicago with $100,000 (1859), and afterward endowed a chair in Washington and Lee Univ., Lexington, Va.

McCORMICK, Leander James: American inventor: b. in Virginia, 1819; d. Chicago, 1900, Feb. 20. In early life he worked with his father in manufacturing reaping-machines; removed to Chicago in 1848, and entered into partnership with his brother, Cyrus Hall McCormick (q.v.), and superintended the manufacturing department of their reaping-machine plant until 1879, when the firm was incorporated as the McCormick Harvesting-Machine Company. Ten years later he retired from active business. Many of the improvements in the famous McCormick reaping-machine were made by him. In 1871, he gave an observatory with a powerful telescope to the University of Virginia.

McCORMICK, Robert Sanderson: U. S. diplomat: b. Rockbridge co., Va., 1849, July 26. He studied at the universities of Chicago and of Virginia, and in 1892 became secretary of legation in London. In 1892-93, he was the official representative of the World's Columbian Exposition in London; from March 1901, to July 1902, was envoy extraordinary and minister plenipotentiary, and from July to Dec., 1902, first ambassador to Austria-Hungary. He became ambassador to Russia in 1902, and 1905, May 1, succeeded Gen. Horace Porter as ambassador to France, remaining at that post until 1907, Mar. 2. He has received many foreign decorations of honor.

McCORMICK OBSERVATORY: an astronomical station connected with the University of Virginia, near Charlottesville, Va. The funds for the construction of the observatory were principally the gift of Leander J. McCormick, and it was built in 1883-4. The principal instrument is an equatorial of 26 inches aperture, a companion instrument to the Washington 26-inch, both being the work of Alvan Clark & Sons, of Cambridgeport, Mass. The position of the observatory is lat. 38° 2′ 1.2″ n.; long. 5° 14′ 5.2″ w.

McCORMICK THEOLOGICAL SEMINARY: in Chicago, Ill.; opened in 1830, under the auspices of the Presbyterians, as a department of Hanover Academy, at Hanover, Ind. Ten years after its opening, the school was removed to New Albany, Ind. Cyrus H. McCormick (q.v.) offered the institution a liberal endowment, which generous gift caused the removal of the school to Chicago

in 1859. It was for a time known as the Presbyterian Theological Seminary of the Northwest. In 1886, the present name was taken in honor of its liberal benefactor. No fees are charged for lodging or tuition, and some of its income is used in assisting worthy and needy students. In 1907, there were connected with the seminary 10 professors and instructors and 101 students. The library contained about 32,300 volumes. The total income on productive funds and from other sources, but excluding benefactions, was about $65,000. Its buildings and grounds were valued at nearly $1,000,000 and its productive funds at about $1,800,000.

McCOSH, *ma-kŏsh'*, JAMES, D.D., LL.D.: b. Carskeoch, Ayrshire, Scotland, 1811, Apr. 1; d. Princeton, N. J., 1894, Nov. 16. He studied at Glasgow Univ., 1824-29, and at Edinburgh Univ., under Dr. Thos. Chalmers, 1829-34. At the latter place he received the honorary degree of A.M., on motion of Sir Wm. Hamilton, for his essay on the Philosophy of the Stoics. 1835 he was ordained minister of the Church of Scotland at Arbroath; but 1839 removed to Brechin; and, 1843, was active in organizing the Free Church of Scotland. There he also wrote his work on *Methods of the Divine Government, Physical and Moral*, published 1850, at Edinburgh, which aroused wide attention, and gained for him the professorship of logic and metaphysics in Queen's College, Belfast, and the degree of LL.D. from Aberdeen. He held this position 16 years, attracted many students, and actively defended the national system of education in Ireland. Meanwhile he added to his reputation as a thinker, by writing, jointly with Dr. Geo. Dickie, *Typical Forms and Special Ends in Creation*, 1856; and by his *Intuitions of the Mind Inductively Investigated*, 1860; and *The Supernatural in Relation to the Natural*, 1862. Elected president of the College of New Jersey, at Princeton (now Princeton University), 1868, he removed to the United States. At that time the college of New Jersey was suffering from the intense feeling which the civil war had caused. Most of the students from the South, from which section the great body of the ante-bellum students at Princeton had come, had ceased to attend the institution, but under his able direction the roll of students and professors nearly quadrupled, and the endowment was increased by several million dollars. Dr. McCosh was much beloved by his associates and pupils. The recent great prosperity of that institution is largely owing to him. In 1868, he received the degree LL.D. from Harvard, and LIT.D. from Queen's College, Ireland. In 1887, Nov., he tendered his resignation as president of Princeton to take effect 1888, and devoted himself anew to authorship. Besides the works already mentioned, and many contributions to the *Princeton Review* and other periodicals, he published *An Examination of Mill's Philosophy, etc.* (1866); *The Laws of Discursive Thought, etc.* (1869); *Christianity and*

Positivism (1871); *The Scottish Philosophy, Biographical, Expository, Critical* (1874); *A Reply to Prof. Tyndall's Belfast Address* (1875); *The Development Hypothesis* (1876); *The Emotions* (1880); his *Philosophical Series*, including some of his best known works, like *Certitude, Providence, and Prayer* (1883), *Psychology: The Cognitive Powers* (1886), and others, was commenced 1882 and completed 1886. He published *The New Departure in College Education* (1885); *Realistic Philosophy* (1887), combining his Philosophical Series in 2 vols., to which was added *Psychology: The Motive Powers* (1887); *The Religious Aspect of Evolution* (1888); and *Our Moral Nature* (1892).

McCRACKAN, *ma-krăk'an*, WILLIAM DENISON, A.M.: American author and lecturer: b. Munich, Germany, 1864, Feb. 12. He is of American parentage, but received his earliest education at the Latin Gymnasium, Stuttgart, Germany, and was afterward graduated at Trinity College, Hartford, Conn., in 1885. He has written *The Rise of the Swiss Republic* (1892); *Romance and Teutonic Switzerland* (1894); *Swiss Solutions of American Problems; Little Idyls of the Big World* (1895); *The Huntington Letters* (1897); *The Fair Land Tyrol* (1905); *The Italian Lakes* (1907); etc.

McCRACK'EN, HENRY MITCHELL, D.D., LL.D.: American Presbyterian clergyman and educator: b. Oxford, Ohio, 1840, Sept. 28. He was graduated at Miami University in 1857; for four years was a teacher and school superintendent; studied at the United Presbyterian Theological Seminary, Xenia, Ohio, and at the Princeton Theological Seminary, and later at Tübingen and Berlin universities. He was minister of the Westminster Church, Columbus, Ohio, 1863-7, and of the First Presbyterian Church at Toledo, Ohio, 1869-81. In 1867 he was deputy to the General Assembly of the Free Church of Scotland, and to that of the Presbyterian Church of Ireland in 1884. From 1880 to 1884 he was chancellor of the Western University, Pittsburg, Pa., and in the latter year became vice-chancellor and professor of philosophy in the University of the City of New York, of which he was made chancellor in 1891. Since then the name of the institution has been changed to New York University, and the seat of the University College and School of Applied Science has been removed to University Heights, New York city. Under his administration the Hall of Fame for Great Americans (q.v.) has been added to the university, its growth and prosperity have greatly increased, and the extension of its work and influence has given it a leading position in the field of American education. Besides numerous papers on subjects of education, religion, and philosophy, he has published *Kant and Lotze*; *Popular Sermons* (1875); *Leaders of the Church Universal* (1879); *John Calvin* (1888); *A Metropolitan*

University (1892); *Lives of Church Leaders: or Heroes of the Cross* (1900).

McCRADY, *ma-krā'dĭ*, EDWARD: American soldier and historian: b. Charleston, S. C., 1833, April 8; d. there 1903, Nov. 2. He was graduated at Charleston College, admitted to the bar in 1855, and joined earnestly in the movement which led to the secession of his state. He took part in the capture of Castle Pinckney, 1860, Dec. 27, and was present at the bombardment of Fort Sumter in the following April. As captain of the first military company raised in South Carolina for the whole war, he entered the Confederate army 1861, June 27, was made major and then lieutenant-colonel, was badly wounded at the second battle of Bull Run (or Manassas), 1862, Aug. 30, and in 1863, January, received an injury in camp from a falling tree, in consequence of which he was transferred from field service to the command of a camp of instruction at Madison, Fla., in 1864. He remained at that post until the end of the war. Later he became major-general of state troops and a member of the South Carolina legislature (1880-90). Among his more important writings may be mentioned: *The History of South Carolina Under the Proprietary Government, 1670-1719* (1897); *The History of South Carolina Under the Royal Government, 1719-1776* (1899); *The History of South Carolina in the Revolution, 1775-1780* (1901); and *The History of South Carolina in the Revolution, 1780-3* (1902).

McCRARY, *ma-krā'rĭ*, GEORGE WASHINGTON: American lawyer; b. Evansville, Ind., 1835, Aug. 29; d. St. Joseph, Mo., 1890, June 23. His parents removed with him in 1836 to that part of Wisconsin territory which is now the state of Iowa. He received a public school education, studied law, was admitted to the bar in 1856 and began practice in Keokuk, where he soon became prominent. Elected to the state legislature in 1857 he became state senator in 1861-5, and member of Congress 1868-77. In Congress introduced the law under which the judiciary of the United States was reorganized; proposed appointment of joint committee to count electoral vote in Hayes-Tilden controversy; was prominent in furthering passage of electoral bill. He served on committees on revision of laws, naval affairs, and judiciary; was secretary of war under President Hayes 1876-9 and was judge of the 8th judicial district in 1879-84. He then resigned and settled in Kansas City, Mo., where he became general consulting attorney of the Atchison, Topeka & Santa Fe Railroad Company. He was the author of *American Law of Elections* (1875).

McCREA, *ma-krā'*, JANE: American woman: b. Bedminster (now Lamington), N. J., 1753; d. near Fort Edward, N. Y., 1777, July 27. She was the daughter of a Scotch Presbyterian clergyman at whose death she went

to live with her brother near Fort Edward, N. Y. At the commencement of the Revolution she was betrothed to David Jones, an officer of the crown. When Burgoyne's army was advancing from the north she was visiting a Mrs. MacNeil at Fort Edward. Her brother, sharing the general alarm felt throughout the region, sent for his sister, intending to remove to a safer locality. On the morning fixed upon for her departure, a band of Indians in the employ of Burgoyne suddenly swooped down upon the MacNeil household and they, together with Miss McCrea, were made prisoners. Mrs. MacNeil and her party arrived in safety at Burgoyne's camp, but half an hour later another party of Indians arrived, bearing a number of freshly severed scalps, one of which bore the long glossy hair of Miss McCrea, whose body was later found by a roadside. The precise manner of her death never became known. The Indians claimed that she was killed by a random shot from an American detachment, whereupon her captors determined to secure the reward for her scalp. It has been surmised that a quarrel arose among the Indians as to whose captive she was and that one of them in a frenzy tomahawked her. Other authorities credit the story that Lieutenant Jones hired the Indians to bring his betrothed to camp where they were to be married and that she was killed in a controversy which arose as to whose captive she was. Lieutenant Jones denied this story; he lived to old age, a morose and gloomy man. At all events the tragedy caused a general feeling of horror throughout America and England. Burgoyne called a council of his Indian chiefs in order to reprove them, but as his allies would have deserted him the offender was allowed to go unpunished. A blasted pine log marked the spot where tradition relates that the beautiful young girl was murdered, and her grave may be seen in a small cemetery near the ruins of Fort Edward.

McCREARY, *ma-krē'rĭ*, James Bennett: American lawyer: b. Madison co., Ky., 1838, July 8. He was graduated at Centre College, Danville, Ky., in 1857, and from the law school of Cumberland University, Tenn., 1859. He entered the Confederate army in 1862 as major of cavalry, and served until close of war. He was a member of the Kentucky House of Representatives in 1869, 1871, and 1873 (being speaker 1871-3); governor of Kentucky 1875-9, and a member of Congress in 1885-97. He was a delegate to the International Monetary Conference at Brussels, Belgium, in 1891, and in 1903 became United States Senator.

McCRIE, *ma-krē'*, Thomas, D.D.: 1772, Nov.—1835, Aug. 5; b. Dunse, Berwickshire: Scottish divine and historian. He studied at the University of Edinburgh, and was ordained 1795 pastor of an Anti-Burgher congregation in that city. McCrie's works are highly valuable to the student of Scottish ecclesiastical history. They

exhibit a vast amount of minute yet important research; and though they are essentially apologetic, the author is never consciously unfair, and does not misstate facts. He has, however, a way of palliating even the indefensible acts of the Reformers, and a zeal for Presbyterianism, that cause the impartial Hallam to describe his spirit as *Presbyterian Hildebrandism.* McCrie's best known works are *The Life of John Knox* (Edin. 1812; new ed. 1855-7), and *The Life of Andrew Melville* (1819).

McCULLOCH, *ma-kŭl'ō*, BENJAMIN: American soldier: b. Rutherford co., Tenn., 1811, Nov. 11; d. 1862, March 7. He became a skilled hunter and boatman, and joined other frontiersmen in settling Texas. In 1835 he served in the Texan war for independence, being in the battle of San Jacinto. He also commanded a company of rangers in the Mexican war under Taylor and Scott, did important work as a scout, and was specially distinguished at the battles of Monterey and Buena Vista, and in the siege of the City of Mexico. In 1853 he was appointed United States marshal in Texas. During the Civil war he served in the Confederate army, was appointed brigadier-general, and sent into Missouri, where he was defeated at the battle of Dug Spring, but later united his forces with those of General Price and then defeated the Federals under General Lyon (q.v.) at Wilson's Creek. He commanded a corps at the battle of Pea Ridge, Ark., where he was killed.

McCULLOCH, HORATIO: 1806-67; b. Glasgow: Scottish landscape painter. He exhibited first, 1829. In 1836 he was elected an associate of the Scottish Acad. Two years afterward he was elected a member of the Royal Scottish Acad., and removed to Edinburgh, where he died. McCulloch painted the Highlands with unrivalled truth, breadth, and imagination. Among his principal pictures are *Highland Loch, Loch-an-Eilan, View in Cadzow Forest, Dream of the Forest, Misty Corries, Deer Forest, Isle of Skye, Loch Achray, Mist Rising off the Mountains, Kilchurn Castle, Loch Awe,* and *Bothwell Castle, on the Clyde.*

McCULLOCH, HUGH: American financier: b. Kennebunk, Me., 1808, Dec. 7; d. near Washington, D. C., 1895, May 24. He was educated at Bowdoin College and went in 1833 to Fort Wayne, Ind., where he established a law practice which he continued until 1835 when he entered a branch of the State Bank of Indiana. He was chosen director in 1836 and in 1857 became president of the newly incorporated State Bank of Indiana. He was appointed Comptroller of the Currency in 1863 and in 1865 became Secretary of the Treasury under President Lincoln. Owing to the enormous expenses incurred by the Civil war, the finances of the country were in a critical condition; in six months the large sum due 500,000 sol-

diers and sailors was paid, together with other heavy expenses, and a reduction of the national debt was begun. McCulloch converted more than $1,000,000,000 of short-time obligations into a funded debt, and in less than two years had succeeded in putting the finances of the country on a sound basis. Congress approved his course and his plan for a speedy resumption of specie payment, but he met with opposition in his purpose to retire the legal tender notes. He occupied the office until 1869 and in 1871 opened a banking business in London, where he remained until 1878. He was reappointed to the secretaryship of the treasury by President Arthur in 1884 and continued in office until the close of the administration. He wrote *Men and Measures of Half a Century*, and many of his speeches together with a large share of his correspondence have been published. He was the last living member of Lincoln's distinguished cabinet.

MacCUL'LOCH, John, M.D.: geologist and physician: 1773, Oct. 6—1835, Aug. 21; b. in the island of Guernsey; of Scottish family. He studied medicine at Edinburgh, became assistant surgeon to an artillery regiment, was employed by government 1811 in geographical and scientific researches in Scotland; 1820 became physician to Prince Leopold of Saxe-Coburg, afterward king of the Belgians; and in his latter years was professor of chemistry and geology in the E. India Company's military school at Addiscombe. His most important works are *Description of the Western Islands of Scotland* (3 vols. Lond. and Edinb. 1819); *A Geological Classification of Rocks, with Descriptive Synopses* (Lond. 1821); *A System of Geology, with a Theory of the Earth* (Lond. 1831); *Malaria—an Essay on the Production and Propagation of this Poison* (Lond. 1827); and *An Essay on the Remittent and Intermittent Diseases* (2 vols. Lond. 1828).

McCUL'LOCH, John Ramsay: 1779, March 1—1864, Nov. 11; b. at Isle of Whithorn, Wigtonshire, England: distinguished political economist. He became known first in connection with the *Scotsman* newspaper and the *Edinburgh Review*. He was a contributor to the former, soon after its establishment 1817, and for a considerable time was its editor. He made his *début* in the latter 1818, by an article on Ricardo's *Principles of Political Economy*, and continued for about 20 years to write for the *Review*, contributing to it almost all the economical articles with a few on other subjects. McCulloch's numerous published volumes rendered good service at a critical period of transition. His treatment of great questions was not original, nor was it elevated above the usual materialistic level; still on that level it was scientifically wrought; and his statistical works specially noted below, show arduous research, scientific arrangement, and fidelity to facts. McCulloch's style is criticized as lacking literary finish, and his mode in writing as dogmatic: in

private life he was beloved. His principal publications comprise: *The Principles of Political Economy; The Literature of Political Economy* (valuable work of reference); *Treatises and Essays on Money, Exchange, Interest, the Letting of Land, Absenteeism*, etc.; *On the Succession to Property Vacant by Death; On the Rate of Wages; A Dictionary of Commerce* (of high value); *Statistical Account of the British Empire* (of high value); *Geographical Dictionary; A Treatise on Taxation and the Funding System*, etc. In 1828 McCulloch was chosen professor of political economy in University College, London; and 1838 he was appointed comptroller of H. M. stationary office, a situation which he held till his death. McCulloch was a foreign associate of the Institute of France; and Peel conferred on him a pension of £200 a year.

MacCULLOUGH, *ma-kŭl'ok*, JOHN EDWARD: American tragedian: b. Coleraine, Ireland, 1837, Nov. 2; d. Philadelphia, 1885, Nov. 8. He came to the United States in 1853, studied for the stage and made his début in Philadelphia, 1857. He played with Edwin Forrest, who left him at his death all his manuscript plays. In 1869 he managed, with Lawrence Barrett, the Bush Street Theater in San Francisco, Cal. His appearance in England in 1881 was not successful, but his popularity in America remained unbroken. Despite his lack of literary education, a serious handicap, he won high rank in his profession. He played De Mauprat to Edwin Booth's Richelieu, and Richmond to his Richard III. His interpretation of Virginius was unexcelled during his day. Among his leading rôles were Hamlet, Macduff, Richelieu, Spartacus, etc. In 1884, at the height of his brilliant career, he suddenly collapsed, both physically and mentally; he died a year later in an insane asylum in Philadelphia.

McCULLOUGH, JOHN GRIFFITH: American politician: b. Welsh Tract, near Newark, Del., 1835, Sept. 16. He was graduated from Delaware College in 1855 and from the law department of the University of Pennsylvania in 1858. He removed to California in 1859, engaged in law practice in Mariposa co., was elected to the state legislature in 1861, to the senate in 1862 and in 1863-7 was attorney-general. In 1867-73 he practiced law in San Francisco and then removed to Bennington, Vt., since when he has been director and president of several railway systems and prominently connected with various banking and commercial enterprises. He was elected to the Vermont senate in 1898 and in 1902 was elected governor of the state.

MacCUNN, *ma-kŭn'*, HAMISH: Scottish composer: b. Greenock, Scotland, 1868, March 22. He was educated in Greenock and at the Royal College of Music, London, made his début in the musical world in 1887, and in 1888 became a junior professor of harmony in the Royal

Academy of Music, which position he resigned in 1894. He was director of the Hampstead Conservatory Orchestra Society in 1892. As a composer he has attained high rank; his productions are rich in melody, and his command of the orchestra is remarkable. His work is typically Scottish in character and in choice of subject. Among the more important of his numerous works are overtures, etc., *The Land of the Mountain and the Sun; Chior Mhor; The Dowie Dens o' Yarrow; The Ship o' the Fiend;* and the operas, *Jeannie Deans* and *Diarmid.*

McCURDY, *ma-kėr'dĭ*, JAMES FREDERICK: Canadian orientalist: b. Chatham, N. B., 1847, Feb. 18. He was educated at the University of New Brunswick, Princeton Theological Seminary, and in Germany. He was assistant professor in oriental languages at Princeton, 1873-82; and Stone lecturer there in 1885-6. In 1886 he was appointed lecturer in University College of Toronto, and since 1888 has been professor of oriental languages in that college. Among his works are: *Aryo-Semitic Speech* (1881); *History, Prophecy, and the Monuments* (3 vols. 1894-1901); *Life and Work of D. J. Macdonnell* (1897); an original commentary on Haggar, and various translations for the American edition of *Lange's Commentary,* etc.

McCUTCHEON, *ma-kut'chon,* GEORGE BARR: American novelist: b. Tippecanoe co., Ind., 1866, July 26. He was educated at Purdue University and began his career as reporter on the Lafayette *Journal* in 1889. At present he is city editor of the Lafayette *Courier.* He has published *Graustark* (1900); *Castle Craneycrow* (1902); *The Sherrods* (1903); *Brewster's Millions* (1903); *The Day of the Dog* (1904); *Beverly of Graustark* (1904); *Nedra* (1905); *Purple Parasol* (1905); *Cowardice Court* (1906); *Jane Cable* (1906); *The Flycrs* (1907); *The Daughter of Anderson Crow* (1907); etc.

McCUTCHEON, JOHN TINNEY: American cartoonist: b. near South Raub, Ind., 1870, May 6. He is a brother of G. B. McCutcheon (q.v.). He was graduated from Purdue University in 1889 and has been connected with the leading newspapers of Chicago since 1889, his work as a cartoonist becoming famous in the campaign of 1896. He was special correspondent during the Spanish-American war, Chinese troubles, and Boer war. He has published in book form *Cartoons by McCutcheon* (1903); *Bird Centre Cartoons* (1904); *The Mysterious Stranger and Other Cartoons* (1905); *Congressman Pumphrey, the People's Friend* (1907); etc.

McDAN'IEL, HENRY DICKERSON: American lawyer: b. Monroe, Ga., 1837, Sept. 4. He was graduated from Mercer University, Macon, Ga., and admitted to the bar in 1856. He attended as delegate the Georgia secession convention in 1861; and served in the Confederate army until the end of the war, attaining the rank of major in

the 11th Georgia infantry. In 1865 he was a member of the Georgia constitutional convention. His disability to hold office having been removed in 1872 by the United States Congress, he served in the state legislature, 1873-4; was state senator, 1874-83, and in 1883 he was elected governor of Georgia, which office he occupied for three years.

MACDONALD, *mâk-do-nâl'*, Étienne-Jacques Joseph-Alexandre, Duke of Taranto, Marshal and Peer of France: 1765, Nov. 17—1840, Sept. 24: b. Sancerre, dept. of Cher; descended from a Scotch family which followed James II. to France. Macdonald embraced the cause of the Revolution, entered the army as a lieutenant and rapidly rose to high military rank. In 1798, he was intrusted with the government of the Roman states, but was compelled to evacuate them by the superior force of the enemy. In 1799, he defeated the Austrians at Modena, and was defeated on the Trebbia by a superior Austrian and Russian force under Suwarrow. As commandant of Versailles, he rendered very important service to Bonaparte in the revolution of 18th Brumaire; and 1800-1, he chased the Austrians from Switzerland and the Tyrol; but after honorably filling important political posts he lost the favor of Bonaparte by his honest support of the cause of Moreau. In 1809 he was summoned by the emperor to take the command of the right wing of the army of Italy under Eugène Beauharnais, and took Laibach. He greatly distinguished himself at the battle of Wagram, and on the field of battle became reconciled to Napoleon, who, for his services on that day, created him marshal and duke. He held a command in Spain 1810, afterward in the Russian campaign; 1813 he defeated the Prussians at Museburg, and contributed to the success of the battles of Lutzen and Bautzen, but was subsequently defeated by Blücher at the Katzbach. After the battle of Leipzig, he was employed in covering the retreat of the French army, and saved himself only by swimming the Elster. In the subsequent struggles on French ground, between the Marne and Seine, Macdonald made desperate efforts; but when he saw that further resistance was hopeless, he advised the emperor to abdicate. The Bourbons made him a peer, and gave him the command of a military division; and on Napoleon's return from Elba, it fell to his lot to oppose his progress to Paris. All his troops went over to Napoleon, but he himself accompanied Louis XVIII. in his flight; and though he returned to France, he refused to serve during the Hundred Days. After the second restoration he was continually loaded with honors of every kind, but consistently maintained, in the chamber of peers, the principles of constitutional liberty. He died at his seat at Courcelles, near Guise.

McDONALD, *mak-dŏn'ald*, Flora: 1720-1790, March 4; b. Milton, South Uist, Hebrides. In 1746 she assisted

Charles Edward Stuart, the 'young pretender'—then a wanderer after his defeat at Culloden—in escaping from his hiding place on the island of South Uist to Skye, whence he made his way to France. When her act became known she was imprisoned on naval vessels and in London till the Indemnity Act 1747. She married Allan McDonald 1750, emigrated to Fayetteville, N. C., 1774, aided the loyalist cause at the beginning of the revolutionary war, and after many dangers returned to the island of Skye, where she died. She was a woman of great beauty, ease and dignity of manner, and personal courage; and her service to 'Prince Charlie' is a favorite theme of Scottish song and story.

MACDON'ALD, GEORGE, LL.D.: preacher, poet and novelist: b. Huntly, Aberdeenshire, Scotland, 1824, Dec. 10; d. Ashtead, Surrey, 1905, Sept. 18. He was educated at Aberdeen University, and Highbury Independent College, London, with a view to the Congregational ministry. He remained 3 years in his first charge of Arundel, Sussex; removing next to Manchester, he gave up preaching through delicate health. He afterward settled down to a literary life in London, connecting himself with the Church of England, and has since preached occasionally and lectured on literary subjects. A civil list pension of £100 was conferred upon him 1877. He visited the United States 1872-3, lecturing, and preaching in a few pulpits. In poetry, he issued *Within and Without* (1856); *A Hidden Life* (1864); and *The Disciple* (1867). He contributed to the periodical literature of the day, was a master in the art of writing fairy stories, and issued a long series of novels and imaginative works, of which the most important are: *David Elginbrod* (1862); *Alec Forbes of Howglen* (1865); *Annals of a Quiet Neighborhood* (1866); *Seaboard Parish,* and *Robert Falconer* (1868); *Malcolm* (1874); *St. George and St. Michael* (1875); *Marquis of Lossie* (1877); *Sir Gibbie* (1879); *Warlock of Glenwarlock* (1882). He also issued *Unspoken Sermons* (1869), and *The Miracles of Our Lord* (1870). His novels convey much practical religion.

MACDONALD, Sir HECTOR: British general: b. Scotland, 1853; d. Paris, France, 1903, March 25. In 1870 he enlisted and served in the ranks 9 years. He was with Sir F. Roberts at Cabul, and for brilliant service at Candahar was made 2d lieutenant. He served in the Boer war of 1881 and was captured at Majubo Hill. He was conspicuous for bravery at Suakim in 1888; was at the capture of Takar in 1891; and was placed in command of the forces in Egypt, 1897-8. He was in command at Magersfontein in 1899 and was then transferred to South Africa, where he commanded the Highland brigade, 1899-1901. He was made K.C.B. and in 1902 was placed in command at Ceylon. Summoned home in 1903 on a

charge of immoral conduct, he went to a hotel in Paris and committed suicide. The committee of inquiry reported (1903, Oct.) that there was not a scintilla of evidence to substantiate the charges preferred against him and reported virtually that it was an instance of a proud, sensitive man assassinated by slander.

MacDONALD, James Wilson Alexander: American sculptor: b. Steubenville, O., 1824, Aug. 25. He studied in St. Louis and in New York. Among his works are statues of *Joan of Arc; Italia;* Edward Bates (1876), in Forest Park, St. Louis; Gen. Custer, at West Point; Fitz-Greene Halleck, in Central Park, New York; an equestrian statue of Gen. Nathaniel Lyon; numerous busts, etc.

MACDON'ALD, Sir John Alexander, D.C.L., LL.D.: 1815, Jan. 11—1891, June 6; b. Scotland; statesman. He removed to Kingston, Canada, with his father 1820; was educated at the Royal Grammar School; admitted to the bar 1835; elected to the provincial parliament 1844; appointed queen's counsel 1846; commissioner of crown lands 1847-50; attorney-general of Canada 1854-62; minister of militia 1862-4; attorney-general 1864-8 and minister of militia 1865-8; member of the house of commons 1867-78; minister of justice 1868; premier 1869-73; re-elected member of the house 1882 and 1887; and again premier 1886. Macdonald was a member of the joint high commission for the settlement of the *Alabama* claims 1871; was honored with a call to the privy council of Great Britain 1872; was created K.C.B. (civil) 1867 and received its grand cross 1884; and received the degree D.C.L. from Oxford University and Trinity College, Toronto, and LL.D. from Queen's University, Kingston, and McGill University, Montreal.

McDONALD, John Bartholomew: American contractor and railroad constructor: b. Ireland, 1844, Nov. 7. He was brought to this country in 1847, and received his education in the public schools of New York. Among his successful undertakings may be mentioned the Fourth avenue improvement for sinking the New York Central Railroad tracks in New York City from 42d street to Harlem; West Shore Railroad from Weehawken to Buffalo; Baltimore & Ohio Railroad from Baltimore to Philadelphia; Illinois Central Railroad from Elgin, Ill., to Dolgeville, Wis.; the Georgian Bay branch of the Canadian Pacific Railroad; the Trenton 'cut-off' of the Pennsylvania Railroad; the Baltimore Belt Railroad, which carried the great Baltimore & Ohio Railroad under the city of Baltimore; etc. He constructed the Jerome Park reservoir, New York City, the largest artificial storage reservoir in the world. His greatest contract was for the construction, equipment, operation and maintenance of the Rapid Transit Railroad (the 'subway') in New York City.

MACDONALD, JOHN SANDFIELD: Canadian statesman: b. St. Raphael's, Canada, 1812, Dec. 12; d. Cornwall, Ont., 1872, June 1. He was self-educated and admitted to the bar in 1840, practicing successfully in Cornwall. In 1841 he was elected to the Canadian parliament as member from Cornwall and re-elected in 1843, 1848, 1852, and 1854. Macdonald was solicitor-general in 1849-51; 1852-4 was speaker of parliament; in 1857 was member of parliament for Cornwall; and premier for Cornwall in 1862-4; in 1867-71 he was premier for Ontario.

McDON'ALD, JOSEPH EWING: 1819, Aug. 29—1891, June 21; b. Butler co., O.; lawyer. He removed to Montgomery co., Ind., 1826; was apprenticed to the saddler's trade; studied two years at Asbury University; was admitted to the bar 1844; and began practicing in Crawfordsville 1845. In 1848 he was elected member of Congress as a democrat, and 1850 was defeated; 1856 was elected attorney-general; 1859 established himself in Indianapolis; 1864 was defeated as candidate for governor; 1872 chairman state democratic committee; and 1875-81 U. S. senator. He was a hard money, protective tariff democrat, and his name was conspicuous among candidates for the democratic presidential nomination 1880 and 1884.

MACDONELL, *măk-dŏn'ĕl*, ALEXANDER: Canadian Roman Catholic prelate: b. Invernessshire, Scotland, 1762; d. Dumfries, Scotland, 1840, Jan. 14. He was educated at the Scots College, Spain, entered the priesthood in 1787, and was for several years a missionary. He assisted in the organization of the Glengarry Fencibles and was their chaplain, and in 1803 established for its disbanded members a colony in Glengarry co., Ontario, Canada. He also assisted in raising the Canadian regiment of Glengarry Fencibles, which was actively engaged in repelling the American invaders in the war of 1812-14. In 1820 he was made Apostolic Vicar of Upper Canada, and through his influence 48 parishes were established in Canada. He was the first Roman Catholic bishop in Upper Canada and died in Scotland while on a mission to obtain funds for the founding of a seminary in his see.

McDONNELL, CHARLES EDWARD, D.D.: American Roman Catholic prelate: b. New York, N. Y., 1854, Feb. 1. He studied at the De La Salle Institute and Saint Francis Xavier's College in that city, but finished his theological course at the American College, Rome, Italy. While there he received the degree of D.D., and was ordained priest by Bishop Chatard 1878, May 18. Returning to America the same year, he was appointed assistant at St. Mary's Church, New York City, and in 1879 was transferred to St. Patrick's Cathedral. On the death of Bishop Loughlin, Dr. McDonnell, who at the time was Archbishop Corrigan's secretary, was named bishop of Brooklyn, being consecrated by Archbishop Corrigan

1892, April 25. At his invitation the Benedictine Fathers have come from the Bahama islands to establish themselves in his diocese, and the Redemptorists also have made a foundation in Brooklyn. He is spiritual adviser of the Catholic Benevolent Legion, and also honorary president of the International Catholic Truth Society.

McDONOGH, *măk-dŏn'ō*, JOHN: American philanthropist: b. Baltimore, Md., 1779, Sept. 29; d. McDonogh, La., 1850, Oct. 26. He was educated at an academy in Baltimore and entered the mercantile business there, removing in 1800 to New Orleans, where he rapidly acquired great wealth. He was deeply interested in the problem of slavery and devised a system through which his slaves were enabled to earn their freedom; he educated those among them who desired it, and sent to Africa shiploads of those who had earned their freedom. He was president of the American Colonization Society and was a generous contributor to its support. The bulk of his fortune of more than $2,000,000 he bequeathed to the cities of New Orleans and Baltimore for the establishment of free schools. The will was adjudged valid after years of litigation and Baltimore established the McDonogh schools while New Orleans invested its portion of the bequest in its public schools.

MACDONOUGH, *mak-dŏn'oh*, THOMAS: 1783, Dec. 23—1825, Nov. 16; b. Newcastle co., Del.: naval officer. He entered the U. S. navy as midshipman 1800; became lieutenant 1807, master commander 1813, and captain 1814; served with Com. Preble in the war against Tripoli 1803-4; and with a force of 14 vessels, 86 guns, and 850 men defeated a British squadron under Capt. George Downie who had 16 vessels, 95 guns, and 1,000 men, on Lake Champlain off Plattsburg, 1814, Sept. 11. For this victory he was promoted captain, given a gold medal by Congress and an estate overlooking the scene of the battle by the state of Vermont, and otherwise honored. He subsequently commanded the Mediterranean squadron, and died at sea while returning home.

MACDOUGAL, *mak-dô'gal*, DANIEL TREMBLY, A.M., M.S., PH.D.: American botanist: b. Liberty, Ind., 1865, March 16. He was graduated at De Pauw University in 1890 and studied in Germany. In 1891-2 he was engaged in explorations in Arizona and Idaho for the United States government, and in 1893-9 was instructor in plant physiology at the University of Minnesota. He was director of the laboratories of the New York Botanical Gardens 1899-1905, and since 1905 has been director of the department of botanic research in Carnegie Institution. Among his books are: *Nature and Work of Plants* (1900); *Practical Text-book of Plant Physiology* (1901); *Elementary Plant Physiology* (1902); *Influence of Light and Darkness Upon Growth and Development* (1903); *Mutants and Hybrids of the Oenotheras*, with Vail and others (1905); etc.

McDOUGAL, *mak-dô'gal*, DAVID: 1809, Sept. 27—1882, Aug. 7; b. Ohio: naval officer. He entered the U. S. navy as midshipman 1828; became passed midshipman 1834, lieutenant 1841, commander 1857, captain 1864, commodore 1869, and rear admiral on the retired list 1873; commanded the *Wyoming* of the Asiatic squadron 1861-4; fought six land batteries and three war vessels at Shimonoséki, Japan, 1863, July 16, sinking one vessel, exploding the boilers of the second, and crippling the third; commandant navy yard, San Francisco 1865-6; commander *Powhattan* 1868-9; and commander s. squadron Pacific fleet 1870.

McDOU'GALL, ALEXANDER: 1731—1786, June 8; b. island of Islay, Scotland: soldier. He accompanied his parents to America 1755; commanded the privateers *Barrington* and *Tiger* in the Old French war 1756; engaged in mercantile business in New York; was imprisoned by the royal authorities for issuing a patriotic address which the assembly voted to be libelous; was active in pre-revolutionary movements; and was appointed colonel 1st N. Y. regiment 1776, June 30. He was promoted brigadier-general 1776, Aug., and major-general 1777, Oct. 20; served with the army till 1780, when he entered the continental Congress, where he was minister of marine a few months; resigned his seat and returned to the army 1781; and was elected to the New York senate 1783 and to congress 1784.

McDOUGALL, WALTER HUGH: American artist: b. Newark, N. J., 1858, Feb. 10. He attended a military academy, and from the age of 16 was self-educated, beginning his artistic work in 1876. He entered upon a distinct career in 1884 by the introduction of newspaper illustration and cartooning in the daily press. His writings include *The Hidden City* (1886); *Number 11* (1890); *History of Christopher Columbus* (1892); *The Rambilicus and His Friends;* and *A Marvelous Journey* (in the New York *World*, 1889).

MacDOUGALL, WILLIAM: Canadian journalist and statesman: b. Toronto, 1822; d. Ottawa, 1905, May 29. He pursued a course of study at Victoria College, Cobourg; was admitted to the bar in 1847; in the following year established the *Canada Farmer;* in 1850 founded the *North American*, afterward united with the Toronto *Daily Globe*, for which he wrote until 1870. He was a member of the executive council, 1862-4, serving also as commissioner of the crown lands; provincial secretary, 1864-9; and acting minister of marine in 1866-7. In 1867 he became minister of public works, and was made lieutenant-governor of Rupert's Land, Northwest Territories, in 1869. In 1865-6, as chairman of a commission, he did efficient work for the extension of Canadian trade, and in 1873 represented Canada as special fisheries commissioner in London. He published *Six Letters on the Amendment of the Provincial Constitution* (1872).

MacDOW'ELL, *mak-dow'ĕl*, Edward Alexander, mus. doc.: American composer: b. New York City, 1861, Dec. 19; d. New York City, 1908, Jan. 23. He was educated at the Paris Conservatory and in Germany, and in 1881 was head of the Darmstadt Conservatory, his specialty being the pianoforte and composition. He resigned his position in 1884 and from 1896-1904 was professor of music at Columbia University. In 1896-8 he was director of the Mendelssohn Glee Club of New York and in 1897-8 president of the American Society of Musicians. He was well known as a pianist and his work as a composer is justly famous. His compositions are marked for their delicate charm, their beauty of expression and poetry of movement, and include concertos, sonatas, symphonies, songs, and pianoforte pieces, among which are: *Woodland Sketches; Forest Idylls; Lancelot and Elaine;* etc.

McDOWELL, *mak-dow'ĕl*, Irvin: 1818, Oct. 15—1885, May 4; b. Columbus, O.: soldier. He received a collegiate education in France; graduated at the U. S. Military Academy, 1838; entered the army as 2d lieutenant 1st U. S. artillery; was adjutant and assistant instructor of infantry tactics at the U. S. Military Academy 1841-5; aide to Gen. Wool, and adjutant-general of his division in the Mexican war; was brevetted captain for Buena Vista, and promoted captain and assistant adjutant-general 1847, May 13; brevetted major 1856; and on duty in the adjutant-general's department till 1861. Early in 1861 he was engaged in inspecting, organizing and mustering troops in Washington; was appointed brigadier-general May 14, and assigned to command the department of n.e. Virginia, and the defenses of Washington s. of the Potomac; appointed commander of the Army of the Potomac (composed of raw recruits) May 29; and commanded in the first battle of Bull Run July 21. He was soon afterward relieved by Gen. McClellan; given command of the 1st corps, Army of the Potomac; and promoted major-general of volunteers 1862, March 14. In August following he became commander of the 3d army corps, and with it fought at Cedar Mountain, Rappahannock Station, and the second Bull Run; and Sept. 6 was relieved from field service, and was refused his request for a court of inquiry into his conduct at Bull Run. He was president of several army boards and courts 1863; commanded department of the Pacific 1864-5; department of California 1865-8; brevetted major-general U. S. army, and mustered out the volunteer service 1866, Sept. 1; commanded department of the East 1868-72; was promoted major-general U. S. army 1872, Nov. 25; commanded division of the South 1872-6; division of the Pacific 1876-82; and retired 1882, Oct. 15.

McDOWELL, Battle of: When Gen. Banks marched up the Shenandoah valley from Winchester to Strasburg and Harrisonburg in 1862, April, Gen. Jackson fell back and took position at Swift Run Gap in the Blue Ridge,

on the 19th. Banks occupied Harrisonburg on the 26th where he was stopped by President Lincoln's order, and May 1 was ordered back to Strasburg. Edward Johnson's command of about 3,000 men, with three batteries, which had held Monterey, 50 m. from Staunton, on the road to West Virginia, was being driven back by the brigades of Milroy and Schenck, Milroy arriving at McDowell, 12 m. e. of Monterey, May 1, where he awaited a junction with Schenck. Edward Johnson, pressed by Milroy in front and threatened by Banks in rear, had fallen back to West View, 7 m. from Staunton, April 20. On the afternoon of the 30th Jackson, leaving Ewell's division at Swift Run Gap to watch Banks, took 8,000 men and a good supply of artillery to Staunton. On May 6 Edward Johnson advanced through Buffalo Gap, pushed back Milroy's advance parties on the 7th, and on the morning of the 8th reached Sitlington's Hill, where, 2 m. distant in the valley beyond he saw Milroy drawn up to receive him. Schenck, by a forced march from Franklin, joined Milroy at 10 A.M., with about 1,500 men. Milroy opened with artillery against the hill where Johnson was forming his command. A desultory artillery fire and skirmishing was kept up until late in the afternoon, when Milroy made a determined effort to drive Johnson from position. Jackson had now come up, and sent his regiments to Johnson's assistance. Milroy's men gained partial advantages, but Jackson's position was too good and his numbers too great to be overcome, and as it was growing dark, Milroy withdrew to McDowell. The Union forces engaged numbered about 2,500 men; their loss was 28 killed and 225 wounded. The Confederates had about 6,000 men engaged and lost 75 killed, and 424 wounded. Schenck buried his dead, on the morning of the 9th withdrew from McDowell, and by easy marches reached Franklin on the 11th. Jackson remained at McDowell on the 9th and marching on the 10th, overtook Schenck at Franklin on the 12th, where he was found so strongly posted that he deemed attack inadvisable, and that afternoon set out on his return march to McDowell, thence to Mount Solon in the Shenandoah valley, where he prepared for the campaign that began with the defeat of one of Banks' detachments in an engagement at Front Royal May 23, his expulsion from Strasburg on the 24th and ended with his defeat at Winchester (q.v.), 1862, May 25, and his retreat across the Potomac.

MACDUFF, *măk-dŭf'*: Scottish thane, or Earl of Fife, commemorated in Shakespeare's play *Macbeth;* d. Lumphanan, Aberdeenshire, in 1057. He was the principal agent in the overthrow of the usurper Macbeth, and the restoration of Malcolm Canmore to the throne of Scotland. For this he was granted many privileges, among them that of a place of refuge to which he and his descendants could flee in case of committing unpremeditated murder. This sanctuary, in the form of a

cross, stood till 1559 in the pass leading to Strathearn. It was then demolished by the Reformers, but its pedestal yet remains.

McDUFFIE, *măk-dŭf'ĭ*, GEORGE: American statesman and orator: b. in Columbia (now Warren) co., Ga., 1778; d. in Sumter District, S. C., 1851, March 11. He was graduated at South Carolina College in 1813, admitted to the bar in 1814, and in 1818 elected to the South Carolina legislature. From 1821 to 1834 he was a member of Congress, and from 1834 to 1836 governor of South Carolina. In 1843 he took his seat in the United States Senate, resigning on account of impaired health in 1846. In his political views and in his congressional career, he was a close follower of J. C. Calhoun (q.v.), being at the outset a liberal constructionist in constitutional questions, but afterward becoming a strong opponent of the tariff and other economic policies of the government, and also a bold advocate of nullification. Although a supporter of Andrew Jackson (q.v.) in 1828, he became bitterly antagonistic to him, not only in respect to the tariff and state rights, but especially so on the question of the United States Bank, which, as chairman of the committee on ways and means, he strongly defended against the hostile policy of the President. In 1832, as a member of the South Carolina Nullification Convention, he drafted the address of South Carolina to the people of the United States. He was one of the ablest orators of his day, and his prominence in public affairs was maintained in spite of an early wound received in a duel, from which he suffered for the remainder of his life.

MACE, n. *māS* [F. *masse*, a lump, a club—from a supposed L. *matĕă*, a beetle, preserved in the dim. *matĕŏla*, a beetle, a mallet: It. *mazza*, a mallet or club]: the insignia of authority in the form of a strong, short staff or club, generally surmounted by a crown, borne before high officials, in some countries, as mayors, lord provosts, the speaker of the British house of commons, the lord chancellor, etc.: *anciently*, a weapon of war in the form of a club with a spiked metal ball at the end, a favorite weapon with knights and with some cavalry, also with fighting priests who were by canon law forbidden to use the sword; the weapon could deliver a terrible blow: also, the heavy rod used at billiards. MACE-BEARER, or MACER, n. *māS'ẽr*, an officer who carries the mace before persons in authority. In Scotland they are officers who have the duty of keeping the silence of a court.

MACE, n. *māS* [F. *macis*—from L. *macis*, a spice]: a spice; the Aril (q.v.) or second coat of the Nutmeg (q.v.). In the fruit, it is within the fleshy part, and envelops the nut. It is a lacerated membrane, blood-red, and somewhat fleshy when fresh. It is prepared for market by drying for some days in the sun, and flattening.

It has a peculiar, strong, agreeable smell and taste, and contains a clear, yellow, volatile oil, and a red, buttery, fixed oil. The volatile oil is obtained from it by distillation. The buttery oil, obtained by expression, mixed with the volatile oil and other substances, is known as *Nutmeg Balsam.* Mace is used as a spice, and has much of the flavor of the nutmeg. It is of bright orange-yellow color, and peculiar wax-like texture. It is imported chiefly from Penang and Singapore, where it is received from the Spice Islands. Small quantities are sent also from the W. Indies, where its cultivation receives some attention.—The aril of species of *Myristica,* different from the true nutmeg, and coarse and inferior, sometimes appears in commerce as mace. MACE-ALE, a liquor flavored with mace.

MACE, FRANCES PARKER LAUGHTON: American poet: b. Orono, Me., 1836, Jan. 15; d. Los Gatos, Cal., 1899, July 20. She was graduated from the Bangor, Me., high school, in 1852 and in 1855 was married to B. H. Mace, a Bangor lawyer. After 1885 she resided in California. She published *Legends, Lyrics, and Sonnets* (1883); *Under Pine and Palm,* poems (1887); *Only Waiting,* her best known poem, attained great popularity.

MACÉ, *mâ-sā,* JEAN: French educator and writer: b. Paris, France, 1815, April 22; d. there 1894, Dec. 13. He was educated at the College Stanislas, served in the French army, 1842-5, was editor of *La République* in 1848, and subsequently taught school in Alsace for 10 years. In 1866 he founded a league of instruction in the Belgian manner. He was decorated with the Legion of Honor in 1880, and elected senator in 1883. He was the author of many popular books for young people, the aim of which was mainly educational, among them his best known work, *Contes de Petit-Chateau* (1862), called in the English translation *Home Fairy Tales; History of a Mouthful of Bread* (1861); *Servants of the Stomach* (1866); *France Before the Franks* (1881).

MACEDO, *mâ-sā'dō,* JOAQUIM MANUEL DE: Brazilian poet, novelist, and statesman: b. province of Sao João d'Itaborahi, 1820, June 24; d. Rio de Janeiro, 1882, April 11. He studied medicine, but presently began to write and became professor of national history in the College of Rio Janeiro. He was one of the most prominent of Brazilian authors in the 19th c., and being keenly interested in politics was elected to the Brazilian chamber in 1854. His works include: *Moreninha,* a novel (1844; 5th ed., revised, 1877); *O Moço Loura,* a novel of the early stages of the Portuguese conquest (1845); *O Dous Amores* (1848); *Vicentina* (1853); *A Nebulosa,* a poem (1857), his greatest work, consisting of six cantos in unrhymed hendecasyllables; *Cotic,* a drama; *Fantasma Branco,* a comedy (1856); *Corógraphia do Brasil* (1873); etc.

MACEDONIA, *măs-ē-dō-nĭ-a:* anciently, a country n. of Thessaly. Originally of small extent, embracing only the dist. Emathia, it gradually extended until, in the time of Philip, father of Alexander, it reached, on the n., the Scardian mountains, a portion of the Hæmus (mod. Balkan) range; on the w., the frontiers of Epirus and Illyria; on the e., the river Nestos (mod. Karasu); and on the s., Thessaly. The country as a whole is mountainous, especially in the s. and w., but there are several large plains of great fertility. The principal rivers were the Strymon, Axius, and Haliacmon. Macedonia was famous among the ancients for its gold and silver mines, and productiveness in oil and wine. It contained a number of flourishing cities well known in ancient history, particularly Pella (the cap.), Pydna, Thessalonica, Potidæa, Olynthos, Philippi, and Amphipolis. The Macedonians are believed by some to have been originally an Illyrian race, but this is not probable. Their language, though different from, was yet allied to that of Greece. The fact, however, that it employed words not used by the Greeks, but preserved in Latin, leads to the inference that the ethnological connection between Greece proper and Macedon belonged to an extremely remote period. The Macedonians were certainly not pure *Hellenes,* nor did the ancients so consider them; but they may be regarded as ruder members of the Grecian nation, whose early development had been hindered. The history of Macedonia is involved in much obscurity till about B.C. 490, when the Persians subdued it, so that the Macedonian king, Alexander I., was compelled to take part with Xerxes in his invasion of Greece. On the retreat of the Persians after the battle of Platæa B.C. 479, Macedonia recovered its independence. Under the wise and vigorous reign of Archelaus (d. B.C. 399), it greatly increased in prosperity and power; but after his death, a period of civil wars and contests for the throne ensued, which ended in the accession of Philip II., B.C. 359, who not only seated himself firmly on the throne, but knew how to develop the resources of his kingdom, and so to direct the warlike spirit of his subjects as greatly to extend his dominions. His son, Alexander III., surnamed Alexander the Great (q.v.), brought half the then known world under his empire; but after his death, the Macedonian empire was broken up, and at the end of 22 years of incessant wars, formed into four principal kingdoms under his greatest generals. Macedonia itself fell to the lot of Antipater, after whose death ensued another period of civil wars and contests for the throne, of which the Greeks endeavored to take advantage for recovery of their ancient independence. But the Athenians having called in the assistance of the Romans against Philip V. of Macedonia, by whom their city was besieged, the Macedonians were defeated by the Romans in the great battle of Cynocephalæ B.C. 197, and

both Greece and Macedonia became subject to the Roman power. Perseus, successor of Philip, was finally defeated at Pydna B.C. 168, and adorned the triumph of Æmilius Paulus. An attempt of the Macedonian nobles to shake off the oppressive yoke of the Romans having also been defeated, and the nobles driven into exile, Macedonia became (B.C. 148) a Roman province, in which Thessaly and part of Illyria were included. In 395 A.D., after the dissolution of the Roman empire, Macedonia became part of the Byzantine Empire. It came under Turkish domination in the 15th century. While the name has no modern territorial significance, it has come into considerable political prominence in connection with the conflict of nationalities in European Turkey, among whom the only object in common is a desire to throw off Turkish rule, the Bulgarians there desiring to be governed from Sofia, the Servians from Belgrade, the Greeks from Athens, and the Turks by the Young Turk Party when it shall be established in Constantinople.

In addition to this question of nationality is one of religion, which complicates matters considerably. There are seven chief religious sects in Macedonia: the adherents of the original Greek Church; those of the schismatic Bulgarian Church; those of the New Greek Church, who recognize the Patriarch in Constantinople; those Bulgarians and Servians, converts of American missionaries, who call themselves Protestants; the Wallacks, who are an offshoot of the ancient Greek Church; those who practise the Jewish faith; and the Mohammedans.

The Turkish government, in administering the affairs of Macedonia, adopted the principle of assisting and protecting the weak and of snubbing and persecuting the strong or predominating party; thus, in a certain district where the Greek is strongest he is least popular with the Turkish authorities. Near the Bulgarian frontier, where the Bulgarian element is practically held in subjection, several public offices are held by Greeks, and so on.

This mode of government led in 1895 to a Bulgarian uprising and in 1896 to a Greek revolt, but would probably long since have proved its success from a Turkish point of view were it not for the fact that the Macedonian Committee in Sofia, a society formed for the purpose of conducting a nationalist campaign in Macedonia to effect freedom from Turkish rule, discovered its real nature and set about to disrupt it. The result was the insurrection in 1903 headed by Boris Sarafoff, the avowed aim of which was to provoke the Turks to massacre Christians and to commit acts that would arouse Christendom and compel the Great Powers to expel them from Europe. The insurrection was crushed by the Porte, with a comparative absence of the atrocities and cruelties that formerly characterized Turkish warfare. Autonomous institutions had been provided for Macedonian Christians by the Berlin Congress of 1878, and Austria

and Russia, acting with the authority of Europe, now drew up a drastic reform scheme which provided that civilian agents of the two governments must accompany the Turkish inspector-general, to direct his attention to the needs of the population, and to report to their governments what is done and what left undone. The reorganization of the police in the disturbed vilayets is under the charge of a foreign officer. Mixed commissions of Mohammedans and Christians report on crimes and outrages. The sultan is 'requested' to allot funds for the repatriation of exiles, for the immediate needs of the populations, and for the rebuilding of their homes. Taxation of the expelled Christians was remitted for a year, while the formation of bands of Bashi-Bazouks is absolutely prevented.

MACEDO'NIANS: party or sect which arose in the church toward the close of the Arian controversy, and took their name from Macedonius, who became patriarch of Constantinople 341, and whose administration, beginning with force, was marked by turbulence and by his persecution of adherents to the Nicene Creed, and ended with his deposition by a council 360. He died soon afterward. Their distinctive doctrine was the denial of the divinity of the Holy Spirit. In the early stage of the Arian question, the subject of the Holy Spirit attracted no special notice, being equivalently involved in the great dispute regarding the Son. Later it emerged as the subject of fierce discussion. Macedonius taught that the Holy Spirit was 'unlike to the Father and the Son in substance, and a creature.'—Socrates, *Eccl. Hist.* ii. 46. As a member of the semi-Arian party, he had been opposed by the Arians. His party was a considerable one, no fewer than 36 bishops having appeared attached to it at the council of Constantinople 381. His doctrine, nevertheless, was condemned in that council, in which also was added to the Nicene Creed the special clause by which the divinity of the Holy Spirit is defined. The Macedonians subsisted as a distinct party so late as the time of Theodosius.—They are called also *Pneumatomachi*, or 'Adversaries of the Spirit.'

MACEDO'NIUS, Patriarch of Constantinople: teacher of a heretical doctrine regarding the Holy Spirit. See MACEDONIANS.

McENTEE, *măk'ĕn-tē*, JERVIS: 1828, July 14—1891, Jan. 27; b. Rondout, N. Y.: painter. He studied with Frederic E. Church 1850-51; engaged in business in Rondout; exhibited at the National Acad. of Design 1853; and established a studio in New York 1858. In 1860, he was elected an associate of the National Acad.; 1861 an academician; and 1869 made a sketching and studying tour of Europe. His paintings include *The Melancholy Days have Come* (1860); *Indian Summer* (1861); *Late Autumn* (1863); *October Snow* (1870);

Sea from Shore (1873); *Cape Ann* (1874); *A Song of Summer* (1876); *Winter in the Mountains* (1878); *Clouds* (1879); *Kaatskill River* (1881); *Autumn Memory* (1883); *The Kaatskills in Winter* (1884); *Christmas Eve* (1885); and *Shadows of Autumn* (1886).

MACEO, *mâ-sā'ō*, ANTONIO: Cuban patriot: b. Santiago de Cuba, 1848, July 14; d. near Mariel, 1896, Dec. 2. He joined the insurgent army as a private in 1868 and though without martial training his natural military ability and personal magnetism as a leader soon brought him to the front, making him second only to Gomez. Under his skilful leadership Martinez Campos was defeated at Demajugua and at La Galleta; his campaign in Baracoa in 1878 evidenced masterly generalship, as did also his utter rout of Santacledes at San Ulpiano. Maceo alone of all the Cuban generals refused to sign the peace of Zanjon and made for two months a brave effort to reanimate the exhausted revolutionary spirit. Finding his copatriots thoroughly discouraged, he abandoned the struggle and still refusing to sign the peace, made a tour of the United States and other countries in America seeking support for the cause of Cuban independence. He was the first of the Cuban leaders to land in 1895, and in the revolution which followed took a prominent part. His achievements in the campaign in Pinar del Rio Province, and his battles at Paralijo, Jobito, Mal Tiempo, and Candelaria are among the most brilliant feats in the history of Cuba's long struggle for independence. While crossing the trocha between Majana and Mariel, attended only by his staff, he was surrounded by a Spanish force and killed.

MACEO, JOSÉ, *hō-sā':* Cuban patriot: b. Santiago de Cuba, 1846; d. La Lama del Gata, Cuba, 1896, July 5. He was a brother of Antonio Maceo (q.v.) and took a conspicuous part in the rebellion of 1868-78. He remained in Santiago de Cuba after the peace of Zanjon, which he with his brother refused to sign. He was prominently connected with the uprising of 1879, in which he was captured and sent to Spain. An attempted escape to Gibraltar resulted in his deportation to the fortress La Mola at Mahon, in the Balearic Isles, whence he succeeded in making his escape to Algiers. He lived in Costa Rica from 1885 until the outbreak of the rebellion in Cuba in 1895, when he at once joined the insurrectionary army. He raised a large force which he commanded with signal success at Jobito and later was victorious over Canellas at Sao del Indio. He was killed in a furious engagement at La Lama del Gata, in which the Cubans were finally victorious.

MACERATA, *mâ-chā-râ'tâ:* Central Italy, (1) an episcopal city, capital of the province of the same name, picturesquely situated on an eminence 1,207 feet high, between the Apennines and the sea, 21 miles south of

Ancona. It is encircled by walls, pierced by six gates; has a cathedral, provincial palace, and theatre on the central public square, a college founded in 1290, museum, etc. Pop. of commune (1901) 22,784. (2) The province has an area of 1,087 square miles. Pop. 259,429.

MACERATE, v. *măs'ėr-āt* [L. *macerātus*, softened by steeping—from *macer*, lean, thin: It. *macerare;* F. *macérer*, to macerate]: to mortify; to inflict corporal hardships; to make lean; to steep in any cold liquid for the purpose of softening the texture, or of extracting the soluble portion; to steep almost to solution. MAC'ERATING, imp. MAC'ERATED, pp.: ADJ. steeped in a cold liquid. MAC'ERATOR, n. *-ā-tėr*, one who macerates. MAC'ERA'TION, n. *-ā'shŭn* [F.—L.]: the act of wasting or making lean; mortification; corporal hardship; the process of operation of softening or extracting the soluble portion of anything by steeping in a cold liquid, as water. *Note.*—*Infusion* is performed by pouring a hot liquid over a substance, as tea; *decoction*, by boiling a substance in a liquid.

MACFARREN, *mak-făr'ėn*, Sir GEORGE ALEXANDER, MUS.D.: musical composer: b. London, 1813, Mar. 2; d. there, 1887, Oct. 31; son of a dramatic author and musician. His education was conducted at the Royal Acad. of Music, where he became prof. 1834. As an operatic composer, Dr. Macfarren was the most characteristic representative of the national English school—his aim being to revive the old English music in modern opera. His earliest dramatic work, *The Devil's Opera*, was produced 1838; *Don Quixote* followed 1846; *King Charles II.* 1849, which first brought out Louisa Pyne in English opera. Other works were followed 1860 by the opera *Robin Hood*, which attained a popularity far beyond its predecessors, and was performed during a whole season to overflowing houses. After other operas, the oratorio *John the Baptist* appeared 1873. His works comprise various other pieces, also contributions to the literature of music. His *Rudiments of Harmony* were published 1860; *Six Lectures on Harmony* 1867. In 1875, he became principal of the Royal Acad. of Music, and prof. of music at Cambridge Univ. He was knighted 1883.

McFAUL, JAMES AUGUSTINE, D.D., LL.D.: American Roman Catholic prelate: b. Larne, County Antrim, Ireland, 1850, June 6. At an early age he attended St. Vincent's College, Beatty, Pa., finishing his classical studies at St. Francis Xavier's College, New York city, and subsequently pursuing his theological course at Seton Hall, South Orange, N. J. He was ordained priest 1877, May 26, Jersey City, Newark, and New Brunswick, N. J., being each in turn the scene of his first labors in the ministry. In 1878, he was named assistant at St. Mary's Church, Trenton, N. J., and afterwards pastor of the Church of Our Lady Star of the Sea, Long Branch, N.

J.; some years later assumed the rectorship of the cathedral at Trenton and then became chancellor and vicar general of the diocese. On the death of Bishop O'Farrell in 1894 Father McFaul was chosen his successor, being consecrated at Trenton Oct. 18 of that year. Noteworthy among his achievements are the erection of an orphan asylum at Hopewell and of a home for the aged at Laurenceville, N. J. He is the author of some excellent articles on *American Citizenship* and was a leading power in forming the Young Men's Diocesan Union. However, he is perhaps best known as the founder of the Federation of Catholic Societies.

McGAF'FEY, Ernest: American poet and critic: b. in Ohio, 1867, Aug. For several years he was a contributor in prose and verse to Chicago newspapers, and afterward became critic on the Saturday literary edition of the Chicago *American*, then private secretary to Carter H. Harrison, mayor of Chicago. He has published *Poems of Gun and Rod* (1892); *Poems* (1895); *Poems of the Town* (1900); *Sonnets to a Wife* (1901); *Cosmos* (1903); *Outdoors* (1907); etc.

MacGAHAN, *măk-gā'an*, Januarius Aloysius: journalist: 1844, June 12—1878, June 9; b. New Lexington, Ohio. When he was 7 years old his father died, leaving him to work on the farm. He attended school in winter, till 1860; then taught school for two terms. In 1860, he went to Huntington, Ill., as bookkeeper, and 1864 to St. Louis. Here he wrote for the Huntington *Democrat*, gave readings from Dickens, and studied law. 1869, Jan., he went to Europe, visiting London, Paris, and other cities, and spending several months at Brussels in the study of civil and international law, and French and German. In 1870, he was made special correspondent of the N. Y. *Herald*, overtook Bourbaki's retreating army in the Franco-German war, and went to Lyons and Bordeaux, whence he sent reports of interviews with the republican, monarchical, and clerical parties' leaders. Next he went to Paris, remaining during the Commune, and sending graphic reports of the events there; arrested by the nationalists, he was released through the intercession of U. S. Minister Washburn. He visited Bucharest, Odessa, Yalta, and accompanied the czar's court to St. Petersburg. In 1872, he went with Gen. Sherman to the Caucasus; made reports of the *Alabama* conference at Geneva; and then hastened after the Russian expedition to Khiva, where he arrived just as the bombardment began. Returning to Europe he published *Campaigning on the Oxus*, and *The Fall of Khiva* (London 1874). 1874, July, he reported the Carlist war in the Pyrenees; remained with Don Carlos 10 months, and gained perfect command of Spanish. 1875, June, he sailed for the Polar Sea, and on his return published *Under the Northern Lights* (London 1876). 1876, June, the London *Daily News* sent him to investigate the alleged Turkish bar-

barities in Bulgaria. With Eugene Schuyler, sent by the U. S. government, he made a thorough examination of the desolated districts, and wrote a vivid account confirming the reports of the Turkish inhumanities, thereby enlisting British sympathy for the Christians in Turkey, and causing all hindrances to the intervention of Russia to be removed. His letters were republished in a pamphlet, *Turkish Atrocities in Bulgaria* (London 1876). The next winter he went to Constantinople to report the conference of the ambassadors there; and then to St. Petersburg to watch the preparations for war. Though injured by an accident, he went with the Russian army, saw the first battle with the Turks, and the crossing of the Danube. Again wounded by another accident, he yet went to the front, and remained with Gen. Skobeleff, though four times ill with malarial fever. Remaining at Pera during the negotiations of San Stefano, while an epidemic of spotted fever was raging, he took the disease and died from it.

McGAR'VEY, John William, A.M., LL.D.: American educator: b. Hopkinsville, Ky., 1829, Mar. 1. He was graduated at Bethany College, West Virginia, in 1850; for 12 years preached at Fayette and Dover, Mo., and in 1863 at Lexington, Ky.; and since 1865 has been professor of sacred history at the College of the Bible, Lexington. Of this college, a department of Kentucky University, he has been president since 1895. He is a clergyman of the Christian (Disciples) Church, and for 40 years has been connected with religious journalism. He has written: *Commentaries on the Acts of the Apostles* (1863-93); *Commentaries on Matthew and Mark* (1875); *Lands of the Bible* (1881); *Text and Canon of the New Testament* (1886); *Credibility and Inspiration of the New Testament* (1891); *McGarvey's Sermons* (1894); *Jesus and Jonah* (1897); and *The Authorship of Deuteronomy* (1902).

McGEE, *ma-gē'*, Anita Newcomb, M.D.: American physician: b. Washington, D. C., 1864. She is a daughter of Simon Newcomb (q.v.); was educated at Newnham College, Cambridge, England, at the University of Geneva, and at other institutions in Europe; also graduated in medicine at Columbian University, 1892, and took a post-graduate course in gynecology at the Johns Hopkins Hospital. From 1892 to 1896 she practised in Washington. In 1888, she married W. J. McGee (q.v.). She has held prominent positions in the National Society of the Daughters of the American Revolution, and from April to September, 1898, was director of its hospital corps, which selected women nurses for army and navy. In 1898, Aug., to 1899, Dec., she was acting assistant surgeon in the United States army, being the first woman to hold such a position, and was assigned to duty in the surgeon-general's office, where she organized the army

nurse corps. She served in the Japanese army as supervisor of nurses during the Russo-Japanese war of 1904-5.

McGEE, *ma-gē'*, THOMAS D'ARCY: 1825, Apr. 13—1868, Apr. 7; b. Carlingford, Ireland: statesman. He received a good education, removed to Boston 1842, and became editor of the *Pilot;* returned soon afterward to Ireland, and was made parliamentary reporter for the *Freeman's Journal,* Dublin, and an editor of *The Nation,* the Young Ireland party's organ; and fled to New York 1848. He spent two years there in editorial work; became a royalist 1856; established the *New Era* newspaper in Montreal; and was elected a member of the Canadian parliament 1857. He was president of the executive council 1864-67; drew up the plan for the union of the British N. American provinces; was minister of agriculture 1867; and having severely denounced the Fenian agitation was assassinated after leaving the parliament building at Ottawa. His publications include *History of the Irish Settlers in America* (Boston 1851); *History of the Attempts to Establish the Protestant Reformation in Ireland* (1853); *Catholic History of North America* and *Historical Sketches of O'Connell and his Friends* (1854); *Canadian Ballads* (1858); *Popular History of Ireland* (1862); and *Speeches and Addresses on the British American Union* (1865).

McGEE, W. J.: American scientist: b. in Dubuque county, Iowa, 1853, Apr. 17. He was self-educated, and from 1873 to 1875 surveyed land and practised in the courts. In 1877-81, he made geologic and topographic surveys of northeastern Iowa, and for the United States Geological Survey he surveyed and mapped 300,000 square miles in the southeastern part of the country, and has performed many other important services in the departments of geology, ethnology, and anthropology. From 1893 to 1903 he was ethnologist in charge of the Bureau of American Ethnology. He is president of the American Anthropological Association, was chief of the Department of Anthropology and Ethnology of the Louisiana Purchase Exposition, and is associate editor of the *National Geographic Magazine.* He was president of the National Geographic Society 1904-5; director St. Louis Public Museum 1905-7; and since 1907 commissioner of inland waterways. He has written: *Geology of Chesapeake Bay* (1888); *Pleistocene History of Northeastern Iowa* (1891); *The Lafayette Formation* (1892); *Potable Waters of the Eastern United States* (1894); *The Siouan Indians* (1897); *Primitive Trephining in Peru* (1898); *The Seri Indians* (1900); *Primitive Numbers* (1901); and many scientific memoirs.

McGIFFERT, *ma-gĭf'ĕrt,* ARTHUR CUSHMAN, D.D.: American theologian and author: b. Sauquoit, N. Y., 1861, Mar. 4. He was graduated at the Western Reserve College in 1882, and at Union Theological Seminary in

1885; and at Union studies at the universities of Berlin and Marburg, Germany, and in France and Italy. In 1888-90, he was instructor in church history at Lane Theological Seminary, Cincinnati, and professor there 1890-3, since when he has been professor of church history at Union Theological Seminary, New York. In 1897, he published *A History of Christianity in the Apostolic Age,* and in consequence of criticism and threatened denominational disturbance, involving his own probable trial for heresy, to which this book gave rise, he withdrew from the Presbyterian ministry, and later, while still retaining his professorship, joined the Congregational Church. His other publications include *Dialogue Between a Christian and a Jew,* Doctor's thesis (1888); a translation of Eusebius' *Church History,* with prolegomena and notes (1890); *The Apostles' Creed* (1902); (joint author) *The Christian Point of View* (1902); etc.

McGIFFIN, *ma-gĭf'ĭn,* PHILO NORTON: American naval officer: b. Washington county, Pa., 1860; d. New York, 1897, Feb. 11. He was graduated in 1882 at the United States Naval Academy, and was stationed in China, and at the outbreak of the war between China and France was permitted to resign from the United States navy to enter the service of China. He established a naval academy at Wei-hai-wei, of which he had charge. When the China-Japan war broke out he was placed in command of the Chen Yuen, and was the first American or European to command a modern warship in action. He was in command at the battle of Yalu river, in which action he was so severely injured that he afterward shot himself at a hospital in New York.

McGILL, *ma-gĭl',* JAMES: Canadian philanthropist: b. Glasgow, Scotland, 1744, Oct. 6; d. Montreal, P. Q., 1813, Dec. 19. He was educated in Glasgow and in 1770 removed to Canada, where he engaged in the northwest fur-trade, afterwards becoming a merchant in Montreal. McGill was a member of the lower Canadian parliament, also of various councils, and was a brigadier-general in the war of 1812. He used much of his wealth in philanthropic work and at his death founded McGill College in Montreal.

McGILL COLLEGE AND UNIVERSITY: Montreal, Canada; was founded in 1811 by James McGill (q.v.). By will he left an estate known as the 'Burnside Estate,' which contained 47 acres of land and a fine manor house, near Montreal, and £10,000 to the 'Royal Institution for the Advancement of Learning,' for the establishment of a university in Lower Canada (province of Quebec). The bequest was valued at the time as worth about $120,000. It was stipulated that one of the colleges of the university should be known in perpetuity as McGill College.

McGill College and University stands at the head of a group of schools and colleges and is affiliated with Cam-

bridge, Oxford, and Dublin universities. Many generous benefactors have supplied means for the foundation of various schools. Lord Strathcona and Mount Royal erected and endowed the Royal College for Women. This school is a residential college, and is only one of many gifts from the same donor. Sir William Macdonald erected, equipped, and endowed the Macdonald Chemistry and Mining building, the Macdonald Physics building, and the Macdonald Engineering building. He also gave $200,000 endowment to the law school. Peter Redpath gave the university library and the Peter Redpath museum.

The degrees conferred by the university are B.A., M.A., B.SC., M.SC., D.SC., and D.LITT., in the Faculty of Arts, and to both men and women; B.C.L. and D.C.L. in the Faculty of Law; B.ARCH., B.SC., M.SC., and D.SC. in the Faculty of Applied Science, and M.D. and C.M. in the Faculty of Medicine. There are four affiliated theological colleges which adjoin the university grounds. The supreme authority rests with the crown and is exercised by the governor-general of Canada. The governors, fifteen in number, are the members of the 'Royal Institution for the Advancement of Learning,' above mentioned. The president of the Board of Governors is ex-officio the chancellor. The vice-chancellor is the principal, who is the head of the academic department and chief administrative officer. He is ex-officio the vice-chancellor. The Fellows number 43, and are chosen from all the faculties, affiliated colleges and other bodies, with due regard to the representation of each. There are connected with the university about 1,200 students and 115 professors and lecturers, besides a large number of demonstrators. The library contained about 104,000 volumes.

McGILLIVRAY, *ma-gĭl'ĭ-vrā*, ALEXANDER: Creek Indian chief: 1740—1793, Feb. 17; b. in the Creek Nation, Ala.; son of Lachland McGillivray, of Scotland, and a half-breed Creek princess, who was daughter of a French officer. He received a classical education in Charleston; then returned to his tribe; became the autocratic leader of the Creeks, Seminoles, and Chickamaugas; aided the British through the revolutionary war; became an ally of the Spanish gov. of w. Florida; raided the American settlements frequently; and finally made a treaty with Washington in New York 1790. He was polished, shrewd, and treacherous, and was at the same time a British col., an American maj.gen., and a Spanish general.

McGILVARY, EVANDER BRADLEY, A.M., PH.D.: American linguist and philosopher: b. Bangkok, Siam, 1864, July 19, of American parents. He was educated at Bingham School, N. C., and Davidson College, graduating at the latter in 1884. He was appointed as instructor in the classics at Bingham School in 1884, and in 1889-90 studied at Princeton Theological Seminary. From 1891

to 1894 he was translator for the Presbyterian Board of Foreign Missions in Siam, and in 1894 began graduate work at the University of California, where he later became assistant professor. From 1899-1905 he was Sage professor of moral philosophy at Cornell, and since 1905 has been professor of philosophy in the University of Wisconsin. He has translated the Gospels of Matthew, Luke, and John, and the Acts of the Apostles into the Lao dialect of Siamese.

MACGILLYCUDDY REEKS, *mak-gĭl-ĭ-kŭd'ĭ rēks:* highest mountains in Ireland, forming a group in the w. of County Kerry, and rising from the w. shores of the Lakes of Killarney, to the beauty of which their lofty heath-covered summits add an element of grandeur. The Reeks cover about 28 sq.m.; and Carran-tual, loftiest peak, is 3,404 ft. in height.

McGLYNN, *mak-glĭn'*, EDWARD, D.D.: Rom. Cath. priest, and social reformer: b. New York, 1837, Sep. 27; d. Newburg, N. Y., 1900, Jan. 7. He was educated in the public schools of New York and studied theology at the College of the Propaganda, Rome, receiving the degree D.D. after public examination. In 1860, he was consecrated to the priesthood, and on his return to America was made hospital chaplain and assistant pastor, on Father Cumming's death, taking his place at St. Stephen's 1866. He soon incurred the disfavor of the Rom. Cath. authorities by declaring that the public schools were good enough for Rom. Cath. children, and by his unwillingness to establish a parochial school in connection with his church. He also on public occasions made remarks favoring Henry George's land theory, for which he was censured by the archbishop. Upon his persisting in the expression of his views, he was summoned to appear at the Vatican, and on ignoring this command, was excommunicated. Early in 1887 he was made president of the Anti-poverty Society, of which he was one of the founders, and delivered Sunday evening lectures before that body in the Academy of Music in New York. He also lectured in many other American cities, and published numerous articles, advocating his economic theories. He had warm feeling, was eloquent in address, and had many devoted adherents. In 1893, after a hearing before the Pope's delegate, Mgr. Satolli, the ban of excommunication was removed, after signing a document drawn up by the apostolic delegate to the effect that his economic views were not in conflict with the Catholic faith. He was in charge of St. Mary's parish in Newburg at his death.

McGOVERN, *ma-gŏv'ėrn*, JOHN: American author: b. Troy, N. Y., 1850, Feb. 18. He was connected for 16 years with the Chicago *Tribune*, and since 1880 has been engaged in literary work and lecturing, chiefly on great writers and historical characters. In the action of S. E.

Gross, author of the play *The Merchant Prince of Corn-ville,* against Edmond Rostand, author of *Cyrano de Bergerac,* he acted as literary expert for the former, furnishing in the case over 700 exhibits containing innumerable parallels between the two dramas. The United States Court at Chicago issued a decree in 1902 sustaining the claim of Gross to priority of authorship and forbidding the representation of *Cyrano de Bergerac* in this country. McGovern's numerous writings include: *The Empire of Information* (1880); *A Pastoral Poem* (1882); *The Toiler's Diadem* (1885); *Under the Open Sky* (1890); *King Darwin,* a novel (1894); *American Statesmen* (1898); *Famous Women of the World* (1898); *John McGovern's Poems* (1902); etc.

MACGOW'AN, JOHN E.: American journalist: b. Mahoning county, Ohio, 1831, Sep. 30; d. Chattanooga, Tenn., 1903, Apr. 12. He was educated at Hiram College and practised law in Iowa and Ohio until the outbreak of the Rebellion in 1861, when he enlisted in the Federal army and served through the war; he was mustered out of service brevet brigadier-general. MacGowan's career as a journalist began in 1872 and he was prominently connected with the leading newspapers of Tennessee. He was a forceful writer and exerted a wide influence throughout the South. From 1878 until his death he was editor-in-chief of the Chattanooga *Times.*

MACGRADY, *ma-grā'dĭ,* THOMAS: American Roman Catholic clergyman: b. Lexington, Ky., 1863, June 11. He was educated at Saint Joseph's College, Bardstown, Ky., and after theological studies at Kankakee, Ill., was ordained to the priesthood 1887, Apr. He served at the cathedral in Galveston, Texas, for a short time, and was then rector at Houston, Texas (1888-90); at Dallas, Texas; at Lexington and Cynthiana, Ky.; and at Saint Anthony's Church, Bellevue, Ky. (1895-1902). Besides attending to his clerical duties, he wrote and lectured frequently on economic and social subjects, and his views were so radical that he was severely criticised, and was requested by the ecclesiastical authorities to retract his writings, but refused to do so, and resigned from his position in 1902, Dec., though not withdrawing from the priesthood. His writings are avowedly socialistic, and several of them are approved and sold by the Socialist party; they include *The Mistakes of Ingersoll* (1898); *The Two Kingdoms* (1899); *Beyond the Black Ocean* (1901); *City of Angels* (1901); *A Voice from England* (1902); and *The Clerical Capitalist* (1902).

McGRATH', HAROLD: American journalist and novelist: b. Syracuse, N. Y., 1871, Sep. 4. He was educated in Syracuse, and has been engaged in journalism since 1890. He has written: *Arms and the Woman* (1899); *The Puppet Crown* (1901); *The Grey Cloak* (1903); *The Man on the Box* (1904); *The Princess Elopes* (1905);

Enchantment (1905); *Hearts and Masks* (1905); *Half a Rogue* (1906); *The Watteau Shepherdess,* an operetta (1906); *The Best Man* (1907); etc.

McGREADY, *ma-grā'dĭ,* JAMES: American Presbyterian clergyman: b. in Pennsylvania about 1760; d. 1817. He studied for the ministry in the school of John McMillan, of Cannonsburg, Pa., and in 1778 was licensed to preach. After some years of work in North Carolina, in 1796 he removed to southwestern Kentucky, and under his direction began the great revival of religion which culminated in 1800 and became memorable in the religious history of the country. He organized and conducted the first camp-meeting, and employed as preachers unordained young men without special theological training, thereby provoking dissension in the Presbyterian Church. Out of this disagreement arose the Cumberland Presbyterian Church (see PRESBYTERIAN CHURCH), organized in 1810. McGready, however, afterward became reconciled to the older church and resumed his fellowship in it. Two volumes of his sermons were published years after his death, the first at Louisville, Ky., in 1831; the second at Nashville, Tenn., in 1833. Consult: Davidson, *History of the Presbyterian Church in the State of Kentucky* (1847); Foote, *Sketches of North Carolina, Historical and Biographical* (1850; 2d series, 1855) Smith, *History of the Cumberland Presbyterian Church;* Edson, *Early Presbyterianism in Indiana* (1898).

MacHALE', JOHN, D.D.: archbishop of Tuam: 1789 (or 91), Mar. 15—1881, Nov. 7; b. Tuber-na-Fian, Mayo, Ireland. He graduated at St. Patrick's College, Maynooth, 1814, and was ordained priest; prof. of theol. there 1820-25; coadjutor bp. of Killala 1825-34; abp. of Tuam and metropolitan 1834 till his death. In the Vatican Council 1869-70, he was opposed to the dogma of infallibility, but submitted as soon as it was definitively adopted. Dr. MacHale was a patriotic Irishman, urging the Rom. Cath. Emancipation acts, working with O'Connell for repeal, pressing for separate schools for Rom. Catholics, and stoutly opposing all work of Prot. mission societies among his flock. He built in his diocese a cathedral (at Killala), and built or repaired 100 churches, and established many parish schools and convents. He was a man of literary acquirements, published translation of part of Homer's *Iliad* (Dublin 1861), Irish translation of about 60 of Moore's *Melodies, Catechism of Doctrine* in English and Irish, *Evidences and Doctrines of the Catholic Church* (1827); *Book of Prayers,* revised Irish version of the *Pentateuch* from 200 years ago (1863). See his *Life and Times,* by U. J. Bourke (New York 1882).

McHEN'RY, *măk-hĕn'rĭ,* JAMES: 1753, Nov. 16—1816, May 3; b. Ireland: statesman. He received a classical education; removed to Philadelphia about 1771; studied medicine with Dr. Benjamin Rush. On the outbreak of

the Revolution he became surgeon of the 5th Pennsylvania battalion; in 1776, Nov., he was taken prisoner at Ft. Washington; was paroled in the following January, and in 1778, Mar., was exchanged. In May of that year he was made assistant private secretary to Washington, and held that position until 1780, Oct., when as major he was appointed to a place on the staff of Lafayette. Elected in 1781 to the Maryland senate, he continued a member of that body until 1786, being also during the second half of that period a delegate to the Confederation Congress. In 1787 he was made a member of the Constitutional Convention; in 1789 was elected to the General Assembly of Maryland, and sat in the Senate of that state, 1791-6, when he was appointed by Washington secretary of war, retaining that position under John Adams' administration until 1800. As a Federalist he used his influence in favor of a strong national defense, and was a zealous partisan of Alexander Hamilton. After resigning from Adams' cabinet he spent the rest of his life in Maryland. Ft. McHenry was named after him.

McHENRY, James: American physician and author: b. Larne, Ireland, 1785, Dec. 20; d. there, 1845, July 21. He was educated in Dublin and Glasgow, and in 1817 emigrated to the United States and finally settled in Philadelphia, where he practised medicine and was engaged in mercantile business. In 1842, he was appointed United States consul at Londonderry and held that post until his death. Among his works are: *The Usurper: an Historical Tragedy* (played in Philadelphia 1820); *O'Halloran, or the Insurgent* (1824); *The Betrothed of Wyoming* (2d ed. 1830); etc.

MACHETE, *ma-chā'tā:* a short sword-like tool, half knife, half cleaver, used in Cuba and other countries of tropical America for cutting cane and as a weapon in war. It was first brought into prominence during the Cuban revolution.

MACHIAS, *ma-chī'as:* Maine, town, county-seat of Washington county; on the Machias river, and on the Washington County railroad; about 120 miles east by north of Augusta. It is about 12 miles from the mouth of Machias river. A trading post was established here in 1633, by Englishmen, but after a few months they were forced by the French to abandon the place. The first permanent settlement was made in 1763, and in 1784 it was incorporated as a town. It was besieged by the British from Aug. 1 to Nov. 1, 1777, and other attacks were made later. The original township of Machias was divided into East Machias, Machiasport, Marshfield, and Whitneyville. The chief industries are ship-building, lumbering, and fishing. It has considerable coast trade. The principal buildings are the Government building, the court-house, the United States Marine Hospital, and the Porter Memorial Library. Pop. (1910) 2,230.

MACHIAVELLI (or MACCHIAVELLI), *mâ-kē-â-vĕl'lē*, NICCOLO DI BERNARDO DEI: 1469, May 3—1527, June 22; b. Florence. He was pupil of the celebrated scholar, Marcello Virgilio, and was employed in public affairs from a very early age. From a subordinate post in the office of the chancellor of Florence he rose, 1498, to the place of secretary of the 'Ten,' which, in the Florentine constitution of that day, may be regarded as the ministry of foreign affairs. The culminating-point of Machiavelli's reputation as a diplomatist was his mission to Cæsar Borgia, Duke of Valentino 1502, of which an account is preserved in 52 letters written during the course of the negotiation. In 1507 he was sent to Emperor Maximilian; and in 1510 undertook a mission to France (his third diplomatic visit to that country), which had a most important bearing on the relation of France with Italy. On the restoration of the Medici 1512, Machiavelli was involved in the downfall of his patron, the Gonfaloniere Soderini. He was arrested on a charge of conspiracy 1513. On being put to the torture, he disclaimed all knowledge of the alleged conspiracy; but though pardoned, in virtue of the amnesty ordered by Leo X., he was compelled for several years to withdraw from public life, during which period he applied himself to literature. It was not till the death of Lorenzo de' Medici, 1519, that Machiavelli began to recover favor. He was commissioned in that year, by Leo X., to draw up his report on a reform of the state of Florence; and in 1521 and following years, he resumed his old official occupation, being employed in various diplomatic services to several states of Italy. On his return to Florence 1527, May, he was taken ill, and having treated himself, the malady proved fatal.

Machiavelli's writings are very numerous. Beside letters and state-papers, his historical writings comprise *Florentine Histories*, extending from 1215 to 1492, with fragmentary continuation to 1499; *Discourses on the First Decade of Titus Livius; a Life of Castruccio Castracani* (unfinished); a *History of the Affairs of Lucca*. His literary works comprise comedies, an imitation of the *Golden Ass* of Apuleius, an essay on the Italian language, and several minor compositions. He wrote also *Seven Books on the Art of War*. But the great source of his reputation is the celebrated book *De Principatibus*, or, as it has been called, *Del Principe*. A theory for a time prevailed that this work was but a satire on absolutism, and was designed to serve the cause of liberty by making arbitrary power odious and contemptible. This theory, however, besides being utterly irreconcilable with the tone of the work, is disproved by a letter of Machiavelli to his friend Vettori, 1513, discovered 1810, which shows that *The Prince* was written by Machiavelli in order to recommend himself to the Medici. In his ardor for the liberation of Italy from the rule of foreigners, Machiavelli had become convinced that strong

native governments, even though absolute, must be endured; and, having accepted that of the Medici for Florence, he was content to use all means for its security and consolidation. *The Prince* was published, after Machiavelli's death (Rome 1532); and if any doubt be entertained as to the seriousness of the author, the work need only be compared with the commentary furnished by every page of his *Legazioni,* or the reports of his diplomatic missions, also contained in his collected works. Of the many criticisms and rejoinders to which *The Prince* has given occasion, the most remarkable is that of Frederick the Great, *Antimacchiavelli, ou Examen du Prince de Macchiavelli,* 1740. *The Prince* was condemned by Pope Clement VIII. See Villari's great work on Machiavelli (1880-82).

MACHIAVELLIAN, a. *măk'ĭ-ă-vĕ'lĭ-ăn* [after *Machiavelli,* famous political writer of Florence, Italy, 15th c.]: denoting the doctrines of *Machiavelli,* who taught the principles of *expediency* as distinguished from *right* in his system of politics or statesmanship; cunning or crafty in politics and government: N. one who adopts the principles of Machiavelli. MACH'IAVELLISM, n. *-vĕl-ĭzm,* political cunning and artifice intended to advance arbitrary power.

MACHICOLATED, a. *mă-chĭk'ō-lā-tĕd* [mid. L. *machicolamen'tum,* machicolation: F. *machicoulis,* machicolation—from F. *mèche,* a match; *couler,* to flow: OF. *coulis,* flowing]: in *anc. fortifications,* having apertures between the corbels that support a projecting parapet, through which pitch and offensive missiles might be thrown as from a sort of gallery upon the besiegers below: such pierced parapets were common over gateways, towers, etc. MACHICOLATIONS, n. plu. *măch'ĭ-kō-lā'shŭnz,* projecting galleries in castellated buildings, or properly, the apertures above noted. The act of throwing missiles from such parapets is sometimes called *Machicolation.*

MACHINAL, MACHINATE. See under MACHINE.

MACHINE, n. *mă-shēn'* [F. *machine*—from L. *machĭna;* Gr. *mēchănē,* a contrivance, a stratagem, a machine: It. *machina*]: any contrivance or thing which serves to increase or regulate the effects of a given force, as steam, water, or wind; a complex structure or instrument contrived to lessen or supersede human labor; an engine; a coach or light conveyance; in *kinematics,* a combination of resistant bodies so arranged that, by their means, the mechanical forces of nature can be compelled to do work, accompanied by certain determinate motions (see MECHANICAL POWERS). MACHINERY, n. *mă-shē'nĕr-ĭ,* the works or component parts of a machine; machines in general (see MECHANICAL POWERS; also, MACHINERY, POLITICAL ECONOMY OF); complicated routine or management, as of government. MACHINAL, a. *mă-shē'năl,* pertaining to machines. MACHINATE, v. *măk'ĭ-nāt,* to plan or contrive; to form a scheme; to plot. MACH'INATING,

imp. MACH'INATED, pp. MACH'INATOR, n. *-nā-tĕr,* one who contrives a scheme for an evil purpose. MACHINATION, n. *măk'ĭ-nā'shŭn,* a plot or scheme formed for some evil purpose; an artful design. MACHINIST, n. *mă-shē'-nĭst,* a constructor of machines; one skilled in the use of machines. MACHINE-WORK, work done by a machine in contradistinction to that done by manual or hand labor.

MACHINE, DYNAMO-ELECTRIC. See ELECTRICAL MACHINES.

MACHINE'-ENGRAV'ING: process in recent years superseding, in whole or in part, the manual operations of the engraver. The first step was the invention of the ruling-machine by Wilson Lowry for engraving plain backgrounds, skies, or any other portions where the work was purely mechanical. The saving of labor was very great, and the work satisfactory. But what is properly denominated machine-engraving is executed wholly by machinery. This department consequently excludes all artistic work, and is generally restricted to the engraving of patterns, bank-notes, etc. For the engraving of bank-notes, several very complex machines have been invented. The Americans particularly are distinguished in machine-engraving; and to Jacob Perkins of Mass. is due the introduction of the bank-note engraving-machine. Perhaps the most perfect machine is that invented by Wagner of Berlin, called the 'Universal Rose Engine, or Guilloche Machine,' which consists of a number of machines capable either of separate or of combined action, the number of distinct instruments being co-extensive with the number of species of lines composing the pattern. The number and arrangement of the different instruments can be so varied, that a practically unlimited number of patterns may be obtained, and the correctness and delicacy of these patterns can hardly be surpassed.

MACHINE GUN: a term applied to the entire class of weapons whose characteristic features are rapidity and immense multiplicity of discharge. At first it was applied only to guns using small-arm ammunition; now it includes revolving cannon like the Hotchkiss and the Driggs-Schroeder guns. Among the earliest and best known of this class of weapons is the *Gatling gun* (q.v.), consisting usually of a cluster of 10 barrels, fastened together, and each having its own lock, which is released as it passes the proper point in the revolution of the barrels. They are revolved by the turning of a crank, while the cartridges, with leaden musket-balls, are fed into a drum, or rack, which places them in grooves in front of the locks, by which they are pushed into the chambers. As many as 1,200 shots per minute have been fired from it. The *Gardner gun* is much like the Gatling, only that its barrels do not revolve, but the locks move instead. The *Maxim gun* is automatic in its action. After the first discharge, its recoil and that of each succeeding one is utilized for the further operation of the gun, opening the breech, extracting the

empty shell, taking a fresh cartridge from the cartridge belt and putting another in its place for the next discharge, cocking the gun, inserting the cartridge into the chamber, and then firing the piece. All the operator need do is to pull the trigger once; after that the gun will load and discharge itself, while he can give his attention to directing the aim as the movements of the enemy require. As many as 660 shots can be fired in a minute. The *Armstrong gun* also is rapid-firing, but has a larger calibre, some having been made with a six-inch bore, using 41½ lbs. smokeless powder, and throwing a 100 lb. projectile with a force sufficient to penetrate a 15·4 inch plate of wrought iron. A small calibre gun of this kind has been made to discharge a 45 lb. projectile as often as 15 times a minute. The *Hotchkiss*, and the *Driggs-Schroeder guns*, are very similar in principle, the former being of European, while the latter is exclusively American in origin and development. It is the invention of W. H. Driggs and Lieut. Schroeder of the U. S. navy, and several are being made for both army and navy use. It has the advantage of being lighter and therefore easier to handle than the Hotchkiss gun. It is mounted on a pivot so as to be easily swung in any direction, while an arm projecting from the breech enables the operator to aim it much like a musket, at the same time that his hands are free, the one to open and close the breech, and to discharge it, the other to insert and extract the cartridges. It fires still projectiles with great force, and with a rapidity of 36 shots a minute. See GUN; GUN MANUFACTURE; GUNNERY; etc.

MACHINE-MAKING. machinery is built almost wholly of iron, steel, and brass, and the work of making machines is divided between the designer or draftsman, who lays out the plans; the pattern-maker, who shapes the patterns of the parts in wood; the founder, who makes the castings; the smith, who does the forging and welding; the machinist, who cuts, shapes, files, drills and machines the parts; and the fitter or erector, who completes the work. Machine-making is comparatively modern, the machine-tools that the machinist uses being mainly the production of the last century. Prior to 1800 machines were largely of wood, and lathes were run by hand or foot power. In 1838 there were only four planing-machines in the United States. The solid die for cutting screw-threads (the first practical mechanism for cutting screws uniformly) came out in 1847. The bolt-machine dates from 1857; the gear-cutter, for forming the teeth in gear-wheels, from 1867. Before 1850 all machines were made in a very crude way, with what now seems excessive hand labor. The modern method of making machines with exchangeable duplicate parts, and employing one man or a set of men continuously on a part, results in high-grade work at low cost.

Designing.—The machine designer, or mechanical engineer, must understand all the ordinary mechanical

motions, and know how various sorts of movements are accomplished; he must be familiar with the qualities of the metals, as to strength, rigidity, expansion, etc.; he must know the forms that are readily cast and machined; he should be experienced in the latest practice, knowing in what ways other machine designers are meeting success. Thus equipped, he begins work by making rough sketches of the ways in which the leading parts of a machine might be modeled. These he alters and changes as he sees a chance to improve or simplify, and after each movement is laid out roughly to his liking, he puts them together and makes working drawings. See MECHANICAL DRAWING.

Pattern Making.—Since the framework and most of the parts of the average machine are castings, the work of the pattern maker is important. He cuts out wooden models of all parts that are to be cast, making these models or patterns a very little larger than the finished article is to be. This enlargement allows for the slight shrinkage of the metal in cooling after casting, and also permits the piece to be machined down to exact size. Patterns have to be formed in such a way that they can be placed in a mould of sticky sand and removed without deforming the sand. The flat sides are therefore slightly beveled, being given what is called a 'draw-taper,' that they may be pulled readily out of the sand mould.

Founding.—The iron foundry and the brass foundry are the principal dependency of the machinist for the parts of a machine. The pieces that the designer has drawn, and that the pattern-maker has cut out in wood are sent to the foundry and reproduced in iron, steel, brass, aluminum, etc., in any required number for each part. If a machine has a number of similar parts one pattern is sufficient for the founder to make them all. A part so made is called a casting. See FOUNDING and CASTING.

Forging.—This work when done by hand is termed blacksmithing. Formerly it was all done on the anvil by a hammer in the hands of a smith. Now it is largely done on machines that forge by blows, or by pressure, which accomplishes the same result. Drop-forging is the common name for the process by which most small forgings are now made; large forgings, formerly made with the steam hammer, are now made in the hydraulic press. The drop-press containing a top and bottom pattern (die and counter), receives the roughly shaped part of hot metal, and at a single blow brings it to the required form. In this way wrought iron and steel parts of a machine are made at nearly as low cost as the castings. See HAMMER and STEAM-HAMMER.

Machining.—The machinist takes the castings and forgings that have been prepared for a machine, and planes certain sides to a level, and to correct dimensions; turns other parts in a lathe, to give them accurate roundness and size; drills holes at the right points and of the

proper size; taps out threads in certain holes, so that they will hold the screws that are to be inserted to bind the machine together; files some parts to make them fit easily; and in such ways completes the manufacture of each individual part of a machine, as called for by the drawings. When large flat surfaces are to be given to parts he uses the planer, where small surfaces are to be leveled he employs the shaper, and for smoothing he may use a file specially cut for such work. For cutting notches, grooves and the like the milling-machine is employed, this working with small rotary many-toothed cutters. In order that all the cuts, holes, etc., may be formed in each piece in exactly the same way, a jig is provided for holding the part while it is undergoing machining. A jig is a metal case or box specially made for the part in question, and in this the casting or forging is clamped. Through openings in the jig the holes are bored in the piece, and through other apertures a part may be filed or otherwise brought to a certain level. In this way the machinist insures that every part that he machines in a jig is an accurate duplicate of every other part made in that jig—that is, accurate so far as its working surfaces are concerned. It is immaterial if there be small differences in surfaces that do not come in contact with other parts of the machine. Small holes are drilled in the drill-press; large holes, as the inside of a cylinder, are generally left in the casting and brought to accurate size by turning in a boring-mill. Springs are made either to compress or expand, and in great variety of sizes and strengths, and the machinist selects the proper sizes and forms and incorporates them in the machine, as directed by the drawings.

Fitting.—When the parts of a machine are all prepared, the fitter-up puts them together and adjusts them so as to work correctly. A simple machine or tool, as a monkey wrench, may be fitted together in a few minutes; a complicated machine, as a large newspaper printing-press, may require months of labor before every part is perfectly adjusted to the work it has to perform. Theoretically the parts of a well-made machine ought to go together readily and work at once. In practice, the minute differences that exist as to size necessitate more or less special work to bring them into harmonious action. A gear-wheel may run a shade too tight on its axle or bearing, or some part may fit too loosely. The gears must be so brought together that the parts they move come to the right place at exactly the correct time; the cams must move certain levers, etc., at the right instant and just so far; in short, all the parts must be timed to do their work at the right time, as well as in the proper manner. For every machine depends for its correct operation on the relative timing of the motions of its parts. All these things the fitter has to attend to. He is the one who perfects or completes the machine. In large shops this work is done in a department termed the erecting department.

See LATHE; MACHINERY.

MACHINERY.

MACHIN'ERY, Political Economy of: subject of much debate among working people and students of the philosophy of labor. It has never been questioned that machinery has added greatly to the productive power and the possessions of mankind, and has thus tended to place the poor more nearly on a par with the rich, by enabling them to obtain at cheap rate articles of comfort and luxury of so good a quality as not to be capable of improvement by increase or expenditure. A fallacy has, however, often taken possession of the uninstructed, to the effect that machinery has inherently a tendency to dispense with hand-labor, and so to benefit the consumer at the expense of the workmen (see Luddites). To meet such an objection to the mere use of machinery, it is necessary only to remember, that machinery itself must be made with hands; that the capital of a country will not be diminished by the employment of machinery; and that such capital must continue to be employed in paying wages, as of old. It is true, however, that there is a shifting of the parties to whom the wages are paid, and it is certainly possible that this shifting may work transient and local inconvenience. When the power-loom was invented, much of the capital that had gone to hand-weaving was spent on iron and wood for construction of power-looms. It is also an inconvenient specialty of machinery that it is apt to train the hands to do but one thing, and that thing is liable to fluctuations. The remedy suggested for this is in the working-man not supposing that he has a right to be employed all his days in one special form of work, but in learning a variety of occupations, or rather learning the faculty possessed by intelligent people of turning the hand to a new function when that is necessary. It is of the more importance to keep this in view, because some kinds of manufacture accumulate in certain districts where they can be best executed, and in these there arises a sort of monopoly in that manufacture for the time being, which monopoly is liable to be broken and affected by many accidents.

While arguments against all use, or even against extended use, of machinery plainly involve a mischievous fallacy, it is conceivable that there may be an excessive or abnormal use. Utterances of some reputable thinkers in recent years indicate a growing tendency at least to consider this side of the question, and to trace—sometimes with definite statistics—certain social evils to this excess. It is not to be denied that the question is open. However, for any practical result from a decision adverse to the present scale in the use of machinery, three things seem indispensable: 1. To prove that the liability in the present conditions of the case involves evils greater than would result from any extensive change in the amount of use of machinery: 2. To fix the limit beyond which the use is abnormal and injurious: 3. To show a practical method of reduction and readjustment to such new limit.

It does not appear that these three requisites are secured, or in process of being secured. Meanwhile candid argument, fair presentation of facts, and moral appeal based on these, have right and place. See POLITICAL ECONOMY.

MACHOL', or MAHHOL' (Hebrew): a word in the Old Testament, associated with 'toph' (timbrel), and almost always rendered in the English version by 'dances' or 'dancing.' It is not improbable that *machol* and *toph* may mean 'pipe and tabor,' as these two instruments are often associated with dancing.

McILHENNEY, *măk-ĭl-hĕn'ĭ*, CHARLES MORGAN: American landscape painter: b. Philadelphia, 1858, Apr. 4; d. 1904. Having studied under Frank Briscoe, he continued his course of training at the Academy of Fine Arts in Philadelphia, and soon began to win recognition in his chosen field. Among his best known works are *A Gray Summer Noon* (1884), and *The Passing Storm* (1887). In 1893, he was awarded medals at the Columbian Exposition and won the first Hallgarten prize.

McILVAINE, *măk-ĕl-vān'*, CHARLES PETTIT, D.D., D.C.L.: 1799, June 18—1873, Mar. 14; b. Burlington, N. J.; son of Joseph McIlvaine, U. S. senator from N. J.; of Scotch descent: bp. of the Prot. Episc. Church. He graduated at Princeton College 1816, was ordained deacon by Bp. White 1820, ordained priest 1823, consecrated bp. of Ohio 1832. He was chaplain to the U. S. Milit. Acad. at West Point and prof. of ethics and history 1825-27. He became rector of St. Ann's Church, Brooklyn, in 1830, and in 1831 undertook the duties of the professorship of the evidences of religion and sacred antiquities in the University of the City of New York. He did not long hold the chair, however, as he was the next year elected bishop of Ohio, to succeed Bishop Chase, who had resigned the see. The question of the legality of such a resignation excited considerable interest in the general convention of that year, but in the interest of the diocese both houses agreed in approving Dr. McIlvaine's testimonials, and he was accordingly consecrated in St. Paul's Chapel, New York. Upon his removal to Ohio he was elected president of Kenyon College, Gambier, founded by Bishop Chase, and held the position until 1840, acting also for some years as president of the Theological Seminary in the same place. During his long episcopate he came to be recognized as one of the most influential leaders of the Evangelical or Low Church party in America, and his ability and courtesy were cordially recognized by those who differed from him most widely. Lincoln sent him to England, with Thurlow Weed and Bp. Hughes (Rom. Cath.), on special service in connection with the capture of Mason and Slidell on the steamer *Trent*. Among his published works are *Evidences of Christianity; Oxford Divinity Compared with that of the Romish and Anglican Churches* (Phil. 1841); 22 Sermons on the *Chief*

Dangers of these Times (1854); *The True Temple, or Holy Catholic Church* (1854); various charges to his clergy, especially, *Preaching Christ Crucified* (1863). Memorials of him have been published, by Canon Carus of Winchester, England (Whittaker, New York, 1882); by Bp. Bedell, 1873; by Bp. Huntington, 1873; and a series in *Standard of the Cross*, Cleveland 1882.—Dr. McIlvaine was a scriptural theologian with a tinge of Calvinism, strongly opposed to sacramentarianism (he said 'the sacraments are not to be seen, but seen through'), devoutly evangelical, broad in his Christian fellowship; logical, clear, and powerful in thought and style; with saintly fervor and spirituality of mind; a diligent shepherd of his flock; always manly, with a gracious dignity; an administrator gifted with singular firmness, vigor, tact, and moral power. He died at Florence, Italy.

McINTOSH, *măk'ĭn-tŏsh*, JOHN: soldier: 1755—1826, Nov. 12; b. McIntosh co., Ga.; nephew of Lachlan McIntosh. He was lieutenant colonel of Georgia militia in the revolutionary war; defended the Sunbury fort in Liberty co., Ga., against siege by a superior British force; was forced to surrender after gallant resistance in the battle of Brier Creek 1779, Mar. 3; settled in Florida after the war; was arrested by Spanish troops and imprisoned a year in St. Augustine and Morro Castle, Havana; destroyed the Spanish fort opposite Jacksonville after his release; and was major-general of militia with Jackson at Mobile 1814-15.

McINTOSH, JOHN BAILLIE: soldier: 1829, June 6—1888, June 29; b. Tampa Bay. Entered U. S. navy as midshipman 1848; resigned 1850; entered the army as 2d lieutenant of cavalry 1861, June; was promoted 1st lieutenant 1862; appointed colonel 3d Pennsylvania volunteers 1862, Nov.; promoted captain U. S. A. 1863; brigadier-general volunteers 1864; brevetted major U. S. A. for White Oak Swamp, lieutenant colonel for Gettysburg, colonel for Ashland, brigadier-general for Winchester, and major-general volunteers for Opequan and the war; appointed lieutenant colonel 42d U. S. Infantry 1866; and retired as brigadier-general 1870.

Mc'INTOSH, LACHLAN: soldier: 1725, Mar. 17—1806, Feb. 20; b. near Inverness, Scotland; son of John 'Mor' McIntosh. He accompanied his father and Oglethorpe's company of Highlanders to Georgia 1736; became a mercantile clerk, land-surveyor, and civil engineer; colonel 1st Georgia regiment, brigadier-general 1776, Sep.; killed Governor Button Gwinnett in a duel 1777, May; was appointed to a command in the central army under Washington 1778; led an expedition against the Indians on the Penn. and Va. frontier; commanded the Ga. troops in the siege of Savannah and the defense of Charleston, where he became a prisoner of war; member of congress

1784, and commissioner to treat with Southern Indians 1785.

MacINTOSH, Maria Jane: American author: b. Sunbury, Ga., 1803; d. Morristown, N. J., 1878, Feb. 28. In 1835, she removed to New York, and having suffered pecuniary reverses resorted to her pen for support, publishing in 1841 *Blind Alice*, under the pseudonym of 'Aunt Kitty,' by which she continued subsequently to be known. It was followed by *Conquest and Self-Conquest, Praise and Principle*, and other tales between 1841 and 1846, each designed to inculcate some moral sentiment. In 1846, she published a work entitled *Two Lives, or to Seem and to Be*, and in 1847 her stories were collected in a single volume as *Aunt Kitty's Tales*. Other works are: *Charms and Counter-Charms* (1848); *Donaldson Manor* (1849); *Woman in America* (1850); *The Lofty and the Lowly* (1853); *Violet, or the Cross and the Crown* (1856); *Meta Gray* (1858); *Two Pictures* (1863).

McIVER, Charles Duncan: American educator: b. Moore county, N. C., 1860, Sep. 27; d. 1906, Sep. 17. He was graduated from the University of North Carolina in 1881, adopted teaching as a profession and after organizing the public schools of Winston and Raleigh, became one of the faculty of Peace Institute, Raleigh, in 1886. He was state institute conductor 1889-92, and held important educational posts in his native state, as chairman of the committee of the teachers' assembly in 1891 assisting in securing the establishment of the North Carolina Normal and Industrial College. In 1892, he became the first president of this institution, the only college for women in the state receiving an annual appropriation from the public funds. He was a member of the Southern Educational Board, which controlled the Peabody Fund.

MACK VON LEIBERICH, *mäk fŏn lī'bĕ-rĭh*, Karl, Baron: Austrian military officer: b. Nennslingen, Franconia, 1752, Aug. 24; d. Saint Polten, Austria, 1828, Oct. 22. He entered the army of Austria in 1770, and was in 1797 created field-marshal. After the peace of Campo Formio, he was appointed by the King of Naples to the command of his troops, and took the field against the French and occupied Rome; but a riot in Naples, caused by his having concluded an armistice with the French, forced him to take refuge in the French camp. He was carried prisoner to Paris, but escaped in 1800 and in 1805 was sent to check the French advance along the line of the Iller. But the enemy shut him up in Ulm, and on Oct. 17 Mack capitulated with his army. He was tried by court-martial, but the sentence of death was commuted by the Austrian emperor to expulsion from the army and 20 years' imprisonment. In 1808, Mack was liberated, and in 1819 fully pardoned.

MACKAY, *ma-kā'*, Charles, ll.d.: 1814—1889, Dec.

24; b. Perth, Scotland: author. He was educated in London and Brussels; employed on the London *Morning Chronicle* 1834-43; editor Glasgow *Argus* 1844-47; contributor to the London *Illustrated News* many years; founder London *Review* 1860; and contributor to the *Daily News* under Charles Dickens's editorship. He lectured in the United States 1857-8; and was war-correspondent of the London *Times* in the United States during the civil war. He received his degree from Glasgow Univ. 1846. His publications include *Songs and Poems* (1834); *History of London* (1837); *The Thames and its Tributaries* (1840); *Memoirs of Extraordinary Popular Delusions* (1841); *The Salamandrine, or Love and Immortality* (1842); *Education of the People* (1846); *Life and Liberty in America* (1858); *Studies from the Antique* (1864); *Under the Blue Sky* (1871); *Lost Beauties of the English Language* (1874); *The Poetry and Humor of the Scottish Language;* and *The Founders of the American Republic* (1885).

McKAY, Gordon: American inventor and manufacturer: b. Pittsfield, Mass., 1821; d. Newport, R. I., 1903, Oct. 19. He was the son of a cotton manufacturer, and at 12, on the death of his father, learned civil engineering, at which he worked for some time. Before he was 21 he built a machine-shop in Pittsfield which employed 100 men, and later became treasurer and manager of the Lawrence Machine Company. He was the first successful inventor of machinery for making boots and shoes; he perfected a shoe sewing-machine, invented, but not made practicable, by L. R. Blake, of Abington, Mass.; afterward invented the heeler, lasting-machine, nailing-machine, etc., which came into general use; and by these inventions revolutionized the boot and shoe industry of the world. At the outbreak of the civil war he offered to make the shoes for the Union army, and within three years had leased his machines to more than 60 firms, and shortly became a millionaire. In 1878, he formed the McKay Sewing Machine Association, a strict monopoly which exacted commissions on all shoes made in the United States by the aid of his inventions, and also brought profit through European royalties. In 1893 he placed $4,000,000 in a trust fund for Harvard University. He made many other liberal donations for benevolent and educational objects, and established near Kingston, R. I., the McKay Institute for the manual training of colored youth. By his will the greater part of his estate was left to Harvard.

MACKAY, John William: American capitalist: b. Dublin, Ireland, 1831, Nov. 28; d. London, 1902, July 20. His parents brought him to New York in 1840, and he learned shipbuilding. He went to California as a miner in 1851, and afterward to Nevada, where he continued mining with great perseverance in the face of many disappointments. In 1872 he was one of the discoverers of

the Bonanza mines of the Comstock Lode, in which mines he obtained a two-fifths share, and became very wealthy. He and his partners, Fair, Flood, and O'Brien, founded the Bank of Nevada, of which Mackay was president for years. His relations with Jay Gould being unfriendly, in a spirit of opposition to him, and to the Western Union Telegraph Company, Mackay in 1884 joined with James Gordon Bennett in forming the Commercial Cable Company and the Postal Telegraph Company. He succeeded in laying two cables, overcoming great obstacles, and afterward won in a long rate war with the old lines. The Roman Catholic Orphan Asylum at Virginia City, Nev., founded by him, is noteworthy among his many public benefactions.

MACKAY-SMITH, ALEXANDER, D.D., S.T.D.: American Protestant Episcopal bishop: b. New Haven, Conn., 1850, June 2. He was graduated from Trinity College, Hartford, in 1872, entered the Episcopal ministry and took priest's orders in 1877. After holding rectorships in South Boston, Mass., and New York successively, he was rector of St. John's, Washington, D. C., 1893-1902. In the year last named he was consecrated coadjutor-bishop of Pennsylvania.

MACKAYE, *ma-kā'*, JAMES STEELE: American playwright: b. Buffalo, N. Y., 1844; d. Timpas, Colo., 1894, Feb. 25. In 1868 he went to Paris to study painting; but having there met Delsarte (q.v.), became interested in the latter's theories, and studied dramatic expression. In 1870-1 he gave in New York and Boston lectures on the art of expression. He opened the St. James Theatre at New York in 1872, and appeared there in *Monaldi*, adapted by himself from the French. In 1873-5 he was studying the drama in Paris and England, and at the Crystal Palace, London, he played the title rôle in *Hamlet*. His adaptation of Blum's *Rose Michel* in 1872 ran for 122 nights at the Union Square Theatre, New York. He established in New York the Lyceum School of Acting, which later became the American Academy of Dramatic Arts. For several years he was manager of the Madison Square Theatre, and in 1885 built the Lyceum. Among his further plays were: *Won at Last; Through the Dark; Hazel Kirke; A Fool's Errand; In Spite of All; Paul Kauvar.*

McKEAN, *ma-kēn'*, THOMAS, LL.D.: 1734, March 19—1817, June 24; b. New London, Pa.: signer of the Declaration of Independence. He was admitted to the bar 1754; clerk of the assembly 1757-9; became member of the assembly 1762; delegate to the stamp act congress 1765; appointed judge common pleas and orphans' courts and sole notary for the lower counties of Delaware 1765; collector of Newcastle 1771; member of congress from Delaware 1774-83; president of Delaware 1777, and Congress 1781; chief justice of Pennsylvania 1777-99;

governor of Pennsylvania 1799-1808; and author of the constitution of Pennsylvania 1776. He received the degree LL.D from the College of New Jersey 1781, Dartmouth College 1782, and the University of Pennsylvania 1785.

McKEES'PORT, *ma-kēz'pōrt:* city, in Allegheny co., Pa.; at the junction of the Monongahela and the Youghiogheny rivers, and on the Pennsylvania, the Pittsburg & Lake Erie, and the Baltimore & Ohio railroads; about 10 m. s.e. of Pittsburg. The first permanent settlement was made in 1795 by David McKee, after whom the place was named. It was only a small village until 1829, when coal mining began on an extensive scale. It was incorporated as a borough 1842, Sept. 3, and chartered as a city 1890, April 1.

McKeesport is situated in a region noted for its extensive fields of bituminous coal and its natural gas. The chief industrial establishments are steel and iron works, one of which, the National Tube Company, has 10,000 employes. There are about a dozen smaller establishments; railroad shops, glass works, locomotive works, and others, all together employing about 8,000 men. The city has a large trade in its own manufactures and in coal and lumber. The principal educational institutions are the public and parish schools, the Douglass Industrial College, the Gessley Business College, and the Carnegie Library. Some of its principal buildings are those of the schools mentioned (the high school cost about $168,000), the Young Men's Christian Association hall, and 30 churches. There are 18 different religious denominations and 40 congregations in the city.

There are five banks, the combined capital of which is $1,100,000. The city officials are a mayor, who holds office three years, a council composed of 11 select and 22 common council members. The select members hold office four years, the common council members are elected every two years. The mayor appoints, subject to approval of the council, the board of health, the police and the street commissioners. The council elect the chief of the fire department, the water commissioners, and the city solicitor, and the board of education; the board of assessors, the treasurer, and comptroller are chosen by popular election. The city owns and operates the waterworks. Pop. (1910) 42,694.

McKEES ROCKS: borough, in Allegheny co., Pa.; on the Ohio river, and on the Pittsburg, Chartiers & Youghiogheny and the Pittsburg & Lake Erie railroads; opposite the city of Allegheny. The first permanent settlement was made about 1830 by John McKee. It was incorporated as a borough in 1892. It is situated in a bituminous coal region, and in the vicinity of a fertile agricultural section. The chief industrial establishments are railroad shops, iron and steel works, car works, wire mills, tannery, chain works, rolling mills, glassworks,

flour and lumber mills. The shops and mills employ about 5,500 men. The borough has 9 churches, 4 public and 2 parish schools. The principal public buildings are the churches, schools, a Y. M. C. A. building, and a hospital. There are 3 banks having a combined capital of $325,000; and the business transacted amounts annually to over $1,000,000. The government is vested in a burgess and a council of 7 members. Pop. (1910) 14,702.

MACKELLAR, *ma-kĕl'ar*, THOMAS: American poet: b. New York 1812, Aug. 12; d. 1899, Dec. 29. Having learned the printer's trade in the publishing house of the Harpers, he went to Philadelphia as a proofreader in the stereotype foundry of Lawrence Johnson & Co., in time became a partner in the business, and finally its head, the new firm being styled MacKellar, Smiths & Jordan. Among his works may be mentioned: *Droppings from the Heart* (1844); *Tam's Fortnight Ramble* (1847); *The American Printer* (1866); *Rhymes Atween-Times*, containing *Let Me Kiss Him for His Mother* (1873); and *Hymns and Metrical Psalms* (1883).

McKELWAY, ST. CLAIR, A.M., LL.D., L.H.D., D.C.L.: editor: b. Columbia, Mo., 1845, March 15. He received his early education in the New Jersey State Normal School, and on leaving that began the study of law at Trenton. He completed his legal education in New York, and was admitted to the bar 1866. From early youth he had had a journalistic tendency, and soon after his legal graduation he resumed the newspaper work begun while he was yet a schoolboy. In 1870 he was called to the editorial staff of the Brooklyn *Eagle*, having been the Washington correspondent for that paper, as well as for some of the New York papers. In 1884, on the death of T. Kinsella, the editor of the *Eagle*, he was appointed editor-in-chief. He has been a regent of the University of the State of New York since 1883, and vice-chancellor since 1900, a member of the historical societies of Long Island and Suffolk County, is director of the American Social Science Association; and lectures frequently on educational and political subjects.

McKENDREE, *ma-kĕn'drĭ*, WILLIAM, D.D.: American Methodist bishop: b. King William co., Va., 1757, July 6; d. near Nashville, Tenn., 1835, March 5. He served in the Continental army during the American Revolution, entered the Methodist ministry in 1787 and became a presiding elder 9 years later. In 1801 he made a missionary tour beyond the Alleghanies and was an important factor in the evangelizing of that region. In 1808 he was elected bishop, being the first American-born person to hold that office in the Methodist church. McKendree College (q.v.) was named in his honor. Consult *Life* by Paine (1869).

McKENDREE COLLEGE, in Lebanon, Ill., founded in 1828 under the auspices of the Methodist Episcopal church, and first called Lebanon Seminary. In 1830 the

name was changed, in honor of William McKendree, who gave his estate to the college. In 1839 a new charter was obtained whereby the school was granted university privileges. Abraham Lincoln rendered valuable services in securing the new charter. Students are admitted on certificates from approved schools or on examinations. It has classical, scientific, music, law, and graduate departments. The degrees to which the courses lead are A.B. and B.S. In 1907 there were connected with the school 14 professors, and 258 students. The library contained about 12,000 volumes.

McKENNA, *ma-kĕn'a,* JOSEPH: American jurist: b. Philadelphia 1843, Aug. 10. In 1855 he went to California and was graduated from the Benicia Collegiate Institute in 1865, and admitted to the bar the same year. He was district attorney of Solano co. in 1866-8, and in the sessions of 1875 and 1876 served as a Republican in the lower house of the California legislature. In 1885-93 he was a California representative in the 49th, 50th, 51st and 52d Congresses, resigning from the House in 1893 to accept the appointment to the office of United States circuit judge in the 9th Federal judicial district. This post he resigned to become attorney-general in the cabinet of President McKinley in 1897. On Dec. 16, 1897, he was made an associate justice of the United States Supreme Court to succeed Justice Field, retired, and on Jan. 26, 1898, took his seat. As circuit judge at San Francisco McKenna displayed much skill in the exposition of international law and the construing of treaties.

MACKENZIE, Sir ALEXANDER: Scottish explorer: b. Inverness, Scotland, 1755; d. near Dunkeld 1820, March 12. He went to Canada when young, where he entered the employ of the Northwest Fur Company. In 1789 he explored the great river named after him from the western end of Great Slave Lake to the Arctic ocean, made another expedition to the western coast (1792), and was the first white man to cross the Rocky mountains and reach the Pacific coast. He returned to Britain in 1801, and for his explorations received the honor of knighthood in 1802. He published *Voyages from Montreal Through the Continent of North America to the Frozen and Pacific Oceans in 1789 and 1793.*

MACKENZIE, ALEXANDER: Canadian statesman: b. Logierait, Perthshire, Scotland, 1822, Jan. 28; d. Toronto, Ont., 1892, April 17. He emigrated to Canada in 1842. For five years he worked at the trade of a stonemason at Kingston, but then removed to Sarnia, where he became a contractor. In 1852 he began the Lambton *Shield* and soon became conspicuous as one of the Liberal leaders. He entered the Canadian parliament in 1861, and after the confederation of Canada, in 1867, sat both in the Ontario legislature at Toronto and in the Dominion parliament at Ottawa. When the Hon. Edward Blake

became prime minister of Ontario, in 1871, Mackenzie joined his cabinet, and became provincial treasurer, but, in consequence of a law forbidding membership of more than one legislature, he elected in 1872 to sit in the Dominion parliament. In 1873, when the government of Sir John Macdonald was overthrown, Mackenzie, now the leader of the Liberal party, became prime minister of Canada, and held office for five years. He himself took the great spending department of public works. In 1878 his government was defeated by the advocates of protection, and in 1880 he was obliged by ill health to hand over the leadership of the Liberal party to Mr. Blake. Though he remained in parliament for some years, he was never again able to take a prominent part in public affairs.

MACKENZIE, Alexander Slidell (originally Slidell): American naval officer: b. New York 1803, April 6; d. Tarrytown, N. Y., 1848, Sept. 13. He was a brother of John Slidell (q.v.) and assumed the name 'Mackenzie' for an uncle in 1837. He entered the navy in 1815 and became a commander in 1841. While in command of the *Somers* the next year a mutiny among the naval apprentices on board was supposed to have been detected, and three of them, including a son of the secretary of war, were hung from the yardarm on Dec. 1, 1842. He was a popular writer, and among his works are: *A Year in Spain by a Young American* (1829-31; enlarged ed. 1836), which attained great popularity in England and the United States; *Popular Essays on Naval Subjects* (1833); *The American in England* (1835); *Life of John Paul Jones* (1841); etc.

MACKENZIE, *mak-kĕn'zĭ*, Sir George: Scottish lawyer and politician: 1636—1691, May 8; b. Dundee; son of Simon Mackenzie and nephew of the Earl of Seaforth. He studied Greek and philosophy at St. Andrews and Aberdeen, and civil law at Bourges, in France, then—as he himself calls it—'the Athens of Scottish lawyers.' In 1661, he acted as counsel for the Marquis of Argyle, tried by a commission of parliament for high treason. About the same time he was made a justice-depute, and among his other duties we find him, in 1661, appointed to repair 'once in the week at least to Musselburgh and Dalkeith, and to try and judge such persons as are ther or therabout delated of witchcraft.' He was soon after knighted, entered the Scottish parliament 1669 as member from Ross-shire, and 1677 was named king's advocate. His career to this point had been marked by a patriotic spirit. In the midst of his professional labors, he was an eager student in literature. In 1663 appeared his *Religio Stoici, or a Short Discourse Upon Several Divine and Moral Subjects;* 1665, his *Moral Essay Upon Solitude;* 1667, his *Moral Gallantry.* He also composed some poetry. He was among the first Scotchmen who wrote the English language purely. Dryden, in his *Dis-*

course on the Origin and Progress of Satire, alludes to him as 'that noble wit of Scotland.' Unhappily, in the popular mind he is better known as criminal prosecutor in the memorable days of the Covenant, in which capacity as a seemingly willing instrument of despotism, he earned for himself the name of the 'bluidy Mackenzie.' He wrote a defense, entitled *A Vindication of the Government of Charles II.* In 1678 appeared his *Discourse on the Laws and Customs of Scotland in Matters Criminal;* in 1684, his *Institutions of the Laws of Scotland;* and shortly afterward, he took the leading part in founding the Advocates' Library. He was permitted to retire to Oxford, and died in London.

MACKEN'ZIE, Henry: British novelist: 1745, Aug.—1831, Jan. 14; b. Edinburgh. He received his education at the university of his native city, and practiced as an advocate there. In 1804, he was appointed comptroller of taxes for Scotland. His *Man of Feeling* (1771); *Man of the World* (1783), and *Julia de Roubigné,* won him a place among the authors of his time. There is in these works something of the minuteness of Richardson, with a peculiar soft and sentimental tone, partly derived from Sterne, but without evidence of genius. In 1778, Mackenzie began to edit a periodical called the *Mirror* (modelled after the *Spectator*), which lasted 17 months, and was followed by the *Lounger* 1785, which lasted two years. His contributions to these show more manliness of style than his fictions, and considerable wit and humor. He had the credit of being the first to direct public attention, by an article in the *Lounger,* to the merits of the poems of Burns.

MACKENZIE, Sir Morell: English laryngologist: b. Leytonstone, Essex, 1837, July 7; d. London 1892, Feb. 3. He was educated at the London Medical College, Paris and Vienna. In 1859 he met Czermak in Budapest and learning from him the use of the laryngoscope he introduced its use into London. Later he became physician to the London Hospital, and lecturer on diseases of the throat. In 1863 he founded the Throat Hospital in London. In 1887-8 he was associated with specialists of Berlin and Vienna in the treatment of the larynx disease of the crown prince, subsequently Emperor Frederick of Germany, and for these services was knighted by Queen Victoria, and received the Grand Cross and Star of the Hohenzollern Order of Germany. He was the author of *The Use of the Laryngoscope* (1866); *Diseases of the Throat and Nose* (1880); etc.

MACKEN'ZIE, Ranald Slidell: 1840, July 27—1889, Jan. 19; b. Westchester co., N. Y. In 1862 he graduated at West Point and was appointed to the engineer corps; was brevetted 1st lieutenant for bravery at Manassas where he was wounded; 1863, Mar. 3, was commissioned 1st lieutenant; brevetted captain at Chancellorsville, and major at Gettysburg. 1863, Nov. 6, he was made captain; 1864, June 18, brevetted lieutenant-colonel; colonel of the regular army, Oct., for bravery at Cedar Creek; and brigadier-general of volunteers for services at Opequan and other places in Virginia. He was brevetted brigadier-general in the regular army and major-general of volunteers 1865, Mar. Besides service on many battlefields, he was engaged in building bridges, repairing roads, constructing forts, rifle trenches, and other engineering work. 1867, Mar. 6, he was made colonel of infantry; and 1882, Oct. 22, brigadier-general. 1884, Mar. 24, he was placed on the retired list, having been disabled in the line of duty.

MACKENZIE, William: Canadian financier: b. Kirksfield, Ont., 1848. He was educated at the local schools and became a public school teacher. Giving up this occupation he contracted for the construction of a portion of the Victoria Railway—now the Midland division of the Grand Trunk Railway—and later executed contracts for the Coboconk, the Credit Valley, the Canadian Pacific, the Fort McLeod & Edmonton, the Regina, the Hudson's Bay and Dauphin railways and other roads. He controls and is president of the Toronto Street Railway, is also interested in the Montreal and Winnipeg street railways, and with others controls the Birmingham Street Railway and other European lines. His great achievement has been the construction of the various lines forming the Canadian Northern Railway, of which he is president.

MACKENZIE, William Douglas, D.D., LL.D.: American Congregational clergyman; b. Fauresmith, Orange River Colony, South Africa, 1859, July 16. He was graduated from Edinburgh University in 1881, studied divinity in Edinburgh and Göttingen, was professor of theology in the Chicago Theological Seminary 1895-1903,

and since 1903 has been president of the Hartford Theological Seminary. He has published *Ethics of Gambling* (1893); *The Revelation of the Christ* (1896); *Christianity and the Progress of Man* (1897); *South Africa: Its History, Heroes and Wars* (1900); *John Mackenzie, South African Missionary and Statesman* (1902); etc.

MACKENZIE, William Lyon: Canadian journalist and political reformer: b. Dundee, Forfarshire, Scotland, 1795, Mar. 12; d. Toronto, 1861, Aug. 28. In 1820 he came to Canada, and conducted a drug and book store at Little York (now Toronto), and later at Queenstown, where in 1824-6 he published the *Colonial Advocate*. He transferred the *Advocate* office to Toronto in 1826, and there continued the paper until 1833, attacking the office-holding class and demanding governmental reforms. In 1828 he entered the provincial parliament; and having been expelled for alleged libel against that assembly, was five times re-elected and as often re-expelled, until the government refused to issue another writ of election. In 1832 he went to England, and having presented to the home government a petition of grievances from the Canadian reformers, was successful in obtaining the dismissal of the attorney-general and the solicitor-general of Upper Canada and the veto of the Upper Canadian bank bill. In 1834 he was elected first mayor of Toronto, in 1836 began the publication of *The Constitution*, and, in 1837, published in that journal a bold manifesto which was practically a declaration of independence of the provincial government. Soon afterward he undertook armed rebellion. An encounter took place between his followers and the government forces at Montgomery's hill, in the vicinity of Toronto, 1837, Dec. 7, and the insurgents fled to Navy Island in the Niagara, where they were joined by about 500 Americans. The island was bombarded by Canadian royalists, and as a result of this and the strong opposition of General Scott of the United States army, the insurgents broke camp and Mackenzie was imprisoned for a year in Rochester jail. Later he was a journalist in the United States, in 1849 took advantage of the amnesty to return to Canada, was there a member of parliament in 1850-8, and at Toronto published the weekly *Mackenzie's Messenger* from 1858 until shortly before his death. The reforms for which he so persistently contended have since been achieved. He wrote: *Sketches of Canada and the United States* (1833). Consult the *Life* by Lindsey (1862); Dent, *Story of the Upper Canadian Rebellion* (1885); Read, *The Canadian Rebellion of 1837* (1896).

MACKENZIE: Canada, a district in the Northwest Territories, bounded n. by the Arctic Ocean, e. by Keewatin, s. by Athabasca, and separated on the w. from Yukon, by the northernmost spur of the Rocky Mountains. The district created in 1895 and administered by

the government of the Northwest Territories, is the largest in Canada, having an estimated area of 562,182 sq.m., of which 29,548 sq.m. are water. The surface generally is diversified; in the n.w. it is a sterile waste; along the river valleys and on the western mountain slopes it is well forested with fir, pine, spruce, and other northern trees, while coal and other minerals, although unexploited, are found. The chief rivers are the Mackenzie, the Coppermine, and the Great Fish or Black River (q.v.). The soil is comparatively unproductive, the climate being arctic and inhospitable except for the few summer months. The population (1901) 5,216, inhabit the trading settlements of the Hudson's Bay Company, along the Mackenzie and its tributaries. The pelts of the fur-bearing animals of the region are practically the only developed item of commerce. See CANADA.

MACKEN'ZIE RIVER: important river of the Dominion of Canada, discovered and navigated first by Alexander Mackenzie—from whom it derives its name—in 1789. It has its source under the name *Athabasca River* (q.v.), in Mount Brown, and after a n.n.e. course of 687 m. falls into Lake Athabasca. Emerging from this lake as the *Slave River*, it receives the Peace River, and after a further course of 210 m. falls into Great Slave Lake (q.v.). It now assumes the name of Mackenzie River, and conveys the waters of the Great Slave Lake to the Arctic Ocean at Mackenzie Bay, through a final course of 876 m., making a total of 1,773 m. In many places it is more than a mile in width, and it is navigable for steamboats throughout the greater part of its course from Great Slave Lake. There is only one obstruction, and that not a material one, near Fort Hope, lat. about 66° n. Its chief affluent is the Liard, which rises on the w. side of the Rocky Mountains, and after a course of 380 m., forces its way through a pass, and after flowing first e. and then n., joins the Mackenzie River after a total course of 690 m. The mouth of the Mackenzie River is closed from Oct. to June by ice. See ATHABASCA (River and Lake); GREAT SLAVE LAKE and RIVER.

MACKEREL, n. *măk'ĕr-ĕl* [Dut. *mackreel;* OF. *makerel;* F. *maquereau;* It. *maccarello,* a mackerel: comp. L. *macŭla;* It. *maccola,* a spot, a stain—as if named from the dark blotches with which the fish is marked]: a well-known sea-fish. MACKEREL-GALE, a gale which only ripples the sea, or one suitable for catching mackerel. MACKEREL-SKY, a sky streaked or marked like mackerel.

MACK'EREL (*Scomber*): genus of fishes of family *Scomberidæ* (q.v.); having a spindle-shaped body; the tail becoming very slender, and slightly ridged or keeled on each side. Some of the species have, and some have not, air bladders. One species, the COMMMON MACKEREL (*S. scomber*), is plentiful on the coasts of Britain and of Europe, from the Mediterranean to the farthest north,

also on those of Greenland, and on the American side of the n. Atlantic Ocean. It is a very beautiful fish, of brilliant green and blue, the males having nearly straight dark transverse bands, the females having the bands elegantly undulated. The tail is crescent-shaped. The mackerel is said sometimes to attain a length of 20 in., but is usually about 14 or 16 in. long, and about 2 lbs. in weight. It is highly esteemed for the table. Mackerel is readily caught by bait, particularly by any kind of bait moving swiftly through the water—a long slice cut from one of its own kind, or even a slip of red leather, or a piece of scarlet cloth.

It was formerly supposed that great migrations of mackerel took place; but it is now believed, as in regard to herring, that they merely leave the deep water and approach the coast for the purpose of spawning. The time when they appear varies in different latitudes: in the south of England the mackerel season is in the end of spring and beginning of summer. In Orkney, it is in the end of summer.—Another species, the Spanish Mackerel (*S. colias*), which attains the weight of 4 or 5 lbs., and is more obscurely banded, is sometimes caught on the s. coasts of Britain, but is less esteemed: it has an air bladder, which the common mackerel has not.—The Scad (q.v.) is sometimes called Horse-mackerel.—The Mackerel-midge, a very small fish, is a species of Rockling (q.v.), of the family *Gadidæ*.

The mackerel fishery is of the greatest importance in the New England states and Nova Scotia, and in Norway, Ireland and Great Britain. In Europe the fishery is prosecuted almost exclusively by means of small boats and hand lines, but in America is chiefly carried on in staunch sea-going schooners, most of which hail from Gloucester, Mass., and which are equipped with purse-seines, by means of which entire schools are surrounded and captured. The fishing begins off Cape Hatteras in March or April and the schools are followed northward as they appear successively on the New Jersey, New England and Canadian coasts. In addition to the operations of this mackerel fleet, local fisheries are carried on along much of the coast with pound-nets, gill-nets and hand-lines. The spring and local catches are generally sold fresh, the summer catch being split and salted. The product of the fishery has been peculiarly subject to fluctuations, due in large part to alternating periods of abundance and scarcity of the fish. Colonial writers refer to its great plenty, and statistics of the catch inspected in Massachusetts show a somewhat regular recurrence of such periods at intervals of about 20 years. From 350,000 barrels in 1880 and 395,000 in 1881, the catch has steadily declined to 75,000 in 1886, and 18,000 in 1891, since which time it has sometimes been larger, sometimes smaller, but an abundance of young fish and other signs may indicate the approach of another period of plenty.

The number of vessels employed is about 250, or less than one-fourth what it formerly was. An elaborate account of the American mackerel fishery will be found in Brown-Goode's *Materials for a History of the Mackerel Fishery*, Report U. S. Fish Com. (1884); for some recent views see Moore, *Report National Fishery Congress* (Washington 1898); and for methods of preservation, Stevenson, *The Preservation of Fishery Products for Food*, Bull. U. S. Fish Com. (1898).

MACKEREL SHARK, or PORBEAGLE: a shark of the family *Lamnidæ*, allied to the man-eater, and like it sometimes called blue shark, on account of its color, which is frequently seen on both sides of the northern Atlantic Ocean; it is the *Lamna cornubica* of ichthyologists. The ordinary length is about 10 ft., and they become very abundant in summer, when the mackerel are running, along the New England coast, and also about Great Britain, where they are called porbeagles. They are a nuisance to fishermen by destroying their nets, through which several will often tear their way (for they roam about in bands) in pursuit of captured fish. Formerly considerable quantities of oil were saved from their livers, but at present the value of this commodity does not pay for the trouble of taking them.

MACKEY, *măk'ē*, ALBERT GALLATIN: 1807, Mar. 12—1881, June 20; b. Charleston, S. C. He graduated from the medical department of the College of S. C. 1832; settled in Charleston, and 1838 became demonstrator of anatomy at that college; but, 1844, abandoned medicine, and took up the study of Freemasonry and did miscellaneous writing. 1849, he established *The Southern and Western Masonic Miscellany*, writing most of it himself. 1858-60 he conducted a 'Quarterly' in the interest of Masonry. He studied the ancient and several modern languages and delivered frequent lectures. Finally he applied himself wholly to the study of symbolism, and Talmudic and cabalistic lore. He died at Fortress Monroe. The following publications of Mackey are considered authorities on their subjects in England and America: *A Lexicon of Freemasonry* (N. Y. 1845); *The Mystic Tie* (Charleston 1849); *Book of the Chapter* (N. Y. 1858); *A History of Freemasonry in S. C.* (1861); *A Manual of the Lodge* (1862); *Cryptic Masonry*, and *Masonic Ritualist* (1867); *Symbolism of Freemasonry*, and *A Text-book of Masonic Jurisprudence* (1869); *Masonic Parliamentary Law* (1875); and his most important work, *The Encyclopædia of Freemasonry* (1874).

McKIBBIN, *ma-kĭb'ĭn*, CHAMBERS: American soldier: b. Pittsburg, Pa., 1841, Nov. 2. He enlisted as a private in the volunteer service 1862, Sept. 22; was brevetted captain for gallant services in the battle of North Anna River (Va.) and in the operations on the Weldon Railway, and on May 1, 1896, attained the rank of lieutenant-

colonel of the 21st U. S. infantry. At the beginning of the war with Spain he went to Cuba with Shafter's army, fought at Santiago, 1898, July 1, and was made brigadier-general of volunteers and appointed military governor of Santiago. On May 12, 1899, he was mustered out of the volunteer service, and on June 6, 1899, assumed command of the department of Texas, with rank of colonel of infantry (commissioned colonel 12th U. S. infantry, 1899, Apr. 1). He was promoted brigadier-general, 1902, Oct. 2, and was retired 1902, Oct. 3.

McKIM, *ma-kĭm'*, CHARLES FOLLEN, A.M.: American architect: b. Chester co., Pa., 1847, Aug. 24. He studied at the Lawrence Scientific School in 1866, at the Beaux-Arts of Paris in 1867-70, and shortly afterward entered into partnership with Stanford White and William R. Meade. This firm became known in connection with some of the finest triumphs of recent American architecture. Among notable examples of its work are the buildings of Columbia University, the Brooklyn Institute of Arts and Sciences, the state capitol of Rhode Island, and the public library of Boston. In 1903 McKim received the royal gold medal from the Royal Institute of British Architects in recognition of his services to architecture. He is the second American to obtain this honor, R. M. Hunt (q.v.) having been the first. On the occasion of the presentation he made an able speech reviewing the progress of his profession in the United States. He was elected president of the American Institute of Architects.

McKIM, JAMES MILLER: American abolitionist: b. near Carlisle, Pa., 1810, Nov. 14; d. Llewellyn Park, West Orange, N. J., 1874, June 13. He was graduated from Dickinson College (Carlisle, Pa.) in 1828, studied medicine at the University of Pennsylvania and theology at Princeton (1831) and Andover (1832), and in 1835 was ordained a Presbyterian pastor in Womelsdorf, Pa. An original member of the American Anti-Slavery Society, he became its lecturing agent in 1836, Oct., and spoke throughout Pa., often at great personal danger. In 1840 he removed to Philadelphia, where he was publishing agent of the Pennsylvania Anti-Slavery Society and later corresponding secretary until 1862. In 1862, Nov., he called a public meeting in Philadelphia to provide for 10,000 slaves suddenly liberated by the capture of Port Royal, S. C. As a result, the Philadelphia Port Royal relief committee was formed. This committee was expanded in 1863, Nov., into the Pennsylvania Freedman's Relief Association, of which McKim became the corresponding secretary. In that capacity he was active in the establishment of negro schools in the South. In 1865-9 he was corresponding secretary of the American Freedman's Commission, which on his motion was disbanded in 1869, July. In 1865 he assisted in founding and became a proprietor of the New York weekly *Nation*. During the Civil war he was an advocate of the enlist-

ment of negro troops, and as a member of the Union League of Philadelphia assisted in the recruiting of 11 colored regiments.

McKIM, Randolph Harrison, d.d., ll.d.: American Episcopal clergyman: b. Baltimore, 1842, Apr. 15. He was graduated from the University of Virginia, served in the Confederate army 1851-65, subsequently entered the Episcopal ministry, and after holding rectorships in Portsmouth and Alexandria, Va., and those of Holy Trinity, Harlem, N. Y., and Trinity, New Orleans, became rector of Epiphany Church, Washington, D. C., in 1889. He has published: *A Vindication of Protestant Principles* (1879); *Future Punishment* (1883); *Present Day Problems of Christian Thought* (1900); *Christ and Modern Belief* (1893); *Leo XIII. at the Bar of History* (1897); *The Gospel in the Christian Year* (1902); *The Confederate Soldier—His Motives and Aims* (1906); *The Problems of the Pentateuch* (1906); etc.

MACKINAC, *măk'ĭ-năk* or *măk'ĭ-nâ*, ISLAND: in Mackinac co., Mich., at the entrance to Straits of Mackinac, in the n.w. part of Lake Huron; about 255 m. n. by w. of Detroit. The island is about 3 m. long by 2 wide. It is rocky, and covered with trees, shrubs, and flowers. Its cool climate in summer, and the scenery make it a favorite summer resort. The island has been prominent since the early missionaries and explorers mentioned it in connection with its command of the channel entering the straits. The city of Mackinac (the postoffice is Mackinac Island), on the s.e. shore, was chartered in 1900. On a hill just back of the city is Fort Mackinac. Pop. of the city (1900) 665.

McKINLEY, *ma-kĭn'lĭ*, William, ll.d.: American statesman, 25th president of the United States: b. Niles, Trumbull co., Ohio, 1843, Jan. 29.; d. Buffalo, N. Y., 1901, Sept. 14. He was educated at Union Seminary, Poland, Mahoning co., Ohio, and Allegheny College (Meadville, Pa.) 1860-1, was forced by illness to discontinue his college course, taught in the public schools, was a clerk in the Poland postoffice, and on June 11, 1861, enlisted for the Civil war as a private in Co. E of the 23d Ohio volunteer infantry. His first battle was that of Carnifex Ferry (1861, Sept. 10), and on Apr. 15, 1862, while in camp at Fayetteville, western Virginia, he was promoted commissary sergeant. For conspicuous service at Antietam (1862, Sept. 17) he was made 2d lieutenant of Co. D. His subsequent appointments were, 1st lieutenant Co. E (1863, Feb. 7), captain Co. G (1864, July 25), and brevet major (1865, Mar. 14). When mustered out on July 26, 1865, he was acting assistant adjutant-general on the staff of Gen. S. C. Carroll, commanding the veteran reserve corps stationed at Washington. Among other actions in which he participated were those of South Mountain (1862, Sept. 14), Lexington

WILLIAM McKINLEY.
Twenty-fifth President of the United States.

(1864, June 10), Kernstown (1864, July 24), Opequan Creek (Winchester) (1864, Sept. 19), Fisher's Hill (1864, Sept. 22), and Cedar Creek (1864, Oct. 19). At the close of the war he began the study of law at Youngstown, Ohio (1865-6), continued it at the Albany (N. Y.) law school (1866-7), in 1867, Mar., was admitted to the bar at Warren, Trumbull co., Ohio, and at once entered practice at Canton. In 1870-1 he was prosecuting attorney of Stark co., and during the campaign between R. B. Hayes and William Allen for the governorship of the state, spoke effectively against the 'greenback' craze. He was elected to Congress as Republican representative from the 17th Ohio district in 1877, and served continuously in the 45th, 46th and 47th Congresses (1877-83). It was asserted by the Republicans that he was elected in 1882 to the 48th Congress by a majority of 8 ballots; but, although he had received the certificate of election, his seat was successfully contested by J. H. Wallace, who was not, however, seated until 1884, June. He represented the 20th district in the 49th Congress (1885-7), and the 18th in the 50th and 51st Congresses; but in 1890 was defeated in the 16th for the 52d Congress by 300 ballots by J. G. Warwick, Democrat, lieutenant-governor of the state a short time previously. His defeat was attributed to the gerrymandering of the district by the Democratic legislature. His service in Congress was notable. In 1877 he was appointed a member of the judiciary committee, and in 1880, Dec., of the ways and means committee to succeed James A. Garfield; and in 1881 was chairman of the committee in charge of the Garfield memorial exercises in the House. In 1889-90 he was chairman of the ways and means committee. He was a candidate for speaker of the 51st Congress, but was defeated by T. B. Reed on the third ballot in the Republican caucus. He was known among the foremost orators of the House; and his speeches on arbitration as a solution of labor troubles (1886, Apr. 2) and in support of the civil service laws (1890, Apr. 24) were most favorably received. But his principal efforts were made in connection with the tariff, which, from his first appearance in the House, was the chief object of his study. On Apr. 6, 1882, he spoke in advocacy of protection; on Apr. 30, 1884, in opposition to the Morrison tariff bill, making what was esteemed the ablest argument against that measure; and on May 7, 1890, in support of the general tariff bill, now known by his name, which, as chairman of the ways and means committee, he had introduced before the House on Apr. 16. The bill was passed by the House on May 21, by the Senate on Sept. 11, and on Oct. 6 became a law. His bill obtained for him an international reputation, and eventually the presidency. In 1884, 1888, and 1892 he was a prominent member of the Republican national conventions. In 1892-6 he was governor of Ohio, having been elected in

1891 by 21,500 plurality, and in 1893 by the unusual plurality of 80,995. Labor riots occurred during his administration, necessitating the placing of 3,000 militia troops in active service, but the difficulties were successfully adjusted. McKinley also personally directed the relief work for the starving miners of the Hocking Valley district. He was nominated for the presidency by the Republican national convention which met at St. Louis, 1896, June 16, and was elected by a plurality of more than 600,000 over W. J. Bryan, receiving a vote in the electoral college of 271 to 176 for Bryan. Under his administration decided increase in business prosperity followed the passage of the Dingley tariff measure. The most important event of his term was the Spanish-American war (q.v.), which he had believed might be prevented and had done all in his power to avert. When hostilities broke out on the part of certain inhabitants of the Philippine Islands, the President appointed a commission to study the situation and report on the most suitable mode of government for the new territory. On July 7, 1898, he approved the joint resolution of Congress for the annexation of the Hawaiian Islands, and in 1898 he also selected a delegation to represent the United States in the Hague peace conference which convened in 1899, May. The original Philippine commission having rendered a report (1900, Jan. 31), the President appointed a new commission, known from its head, Judge W. H. Taft, as the Taft commission, under whose direction civil government was instituted in the islands on Sept. 1, 1900. (See PHILIPPINES, *History.*) In 1900 the President stood conspicuously for justice in the settlement of the difficulties in China which marked that summer. He was renominated for the presidency by the Republican national convention which met at Philadelphia on June 25, 1900, receiving the entire vote of the 930 delegates. He was elected by a popular vote of 7,207,923 to 6,358,133 for W. J. Bryan, receiving till then the largest popular majority ever given a candidate for the presidency. He obtained 292 electoral votes and carried 28 states. On Sept. 5, 1901, he delivered at the Pan-American Exposition, Buffalo, N. Y., an important address, summarizing at once the problems then before the nation and his policy for their solution. On Sept. 6, while holding a reception in the Music Hall of the Exposition, he was twice shot by Leon Czolgosz, an anarchist. He died on Sept. 14; and Sept. 19 was appointed by his successor, President Roosevelt, a day of mourning and prayer throughout the United States. Consult: Smith (editor), *Speeches and Addresses of William McKinley* (1893); Porter, *The Life of Major McKinley* (1896); and *Speeches and Addresses of William McKinley from 1897 to 1901* (1900). See also UNITED STATES, *History.*

McKINLEY ACT: a name popularly given to a tariff bill reported to Congress, 1890, May 21, by the ways and means committee of the House of Representatives, of which William McKinley was chairman. It became a law in 1900, Oct., and was repealed in 1894. It increased the duties on wool, woolen manufactures, on tin-plate, barley, and some other agricultural products, and remitted the duty on raw sugar. The reciprocity feature was an important part of the bill, providing for the remission of duty on certain products from those countries which should remove duties on American imported products. See TARIFF.

McKINLEY, MOUNT: United States, a peak of the Rocky Mountains, the highest in North America, s. of the central part of Alaska, about 155 m. n. of Cook Inlet. The Indian name for this peak is Traleyka, and the Russian name, Bolshaya. The fact that this is the highest land on the continent was not known till 1896, when Mr. Dickey explored the Sushitna River and the land near its source. He estimated the height of the peak at 20,000 feet, and named it McKinley, in honor of William McKinley (q.v.). In 1903 it was visited by members of the United States Geological Survey. The mountain is a great dome-shaped mass, over 20,000 ft. above the sea.

McKINNEY, *ma-kĭn'ĭ:* city, county seat of Collin co., Tex., on the Missouri, Kansas & Texas and the Houston & Texas Central railroads; about 30 m. n. by e. of Dallas. It is situated in a rich agricultural region, in which cotton is cultivated quite extensively. The chief industrial establishments are cottonseed-oil mills, cotton gins, cotton compresses, wagon and carriage shops, and flour mills. It is the seat of the McKinney Collegiate Institute. The courthouse is a fine building and cost $100,000. The waterworks are owned and operated by the city. Pop. 4,580.

MACKINTOSH, or MACINTOSH, n. *măk'ĭn-tŏsh* [called after the inventor]: a waterproof overcoat or cape.

MACKINTOSH, *măk'ĭn-tŏsh,* Sir JAMES: philosopher and politician: 1765, Oct. 26—1832, May 22; b. Aldowrie, Inverness-shire; of old Highland stock; son of Capt. John Mackintosh of the army. He studied at King's College, Aberdeen, where his most intimate companion was Robert Hall, afterward the celebrated Baptist preacher. He went to Edinburgh 1784 to study medicine; and after obtaining his diploma settled in London, and for some time supported himself by writing for a journal called the *Oracle.* The first work that brought him into notice was his *Vindiciæ Gallicæ* (1791), in reply to Burke's *Reflections on the French Revolution.* In sober philosophic thought, sound feeling, and common sense, it greatly surpassed the splendid philippic against which it was directed, and was enthusiastically lauded by the liberal party; Burke himself thought highly of it. Fox,

Sheridan, and other leading whigs sought the author's acquaintance; and when the 'Association of the Friends of the People' was formed, he was appointed secretary. About this time he turned his attention to the legal profession, and was called to the bar 1795, and attained eminence as a forensic lawyer. In 1799 he lectured on the Law of Nature and of Nations, before the benchers of Lincoln's Inn, attended by brilliant audiences. His defense of Peltier, 1803, Feb. 21, charged with libel on Bonaparte, was superb, though not strictly professional; it was translated into French by Madame de Stäel, and scattered broadcast over Europe. In 1804, he was appointed recorder of Bombay, arrived there in May, was appointed judge of the admiralty court 1806, and remained till 1811. His Indian career was creditable. After his return to England, he entered parliament as whig member for Nairn (1813), gaining honor by his work for the reform of the criminal law, accepted the professorship of law in the college of Haileybury 1818, and 1830 became a member of the board of control under the Grey ministry, and spoke in favor of the Reform Bill. This was his last great political effort. It is occasion of regret that Sir James Mackintosh ever turned aside to a political life. He was essentially a literary moralist and philosopher, and might have won far higher and more enduring reputation if he had resolutely followed that line. As a speaker in parliament he was broad in his sympathies, and so candid as well as so elaborate, that far inferior men surpassed him in instant popular effect. He was one of the most cultured and balanced men of his time.

His *Dissertation on the Progress of Ethical Philosophy,* written for the *Encyclopædia Britannica,* though incomplete, and lacking that precision and profundity that can be acquired only by rigorous and extensive research, shows the admirable powers of the author, his breadth of view, tolerance, impartiality, love of truth and virtue, and his gift of calm and measured eloquence. For the *Cabinet Cyclopædia* he wrote a brief but excellent survey of the history of England. A historical fragment (intended to form portion of a large work) entitled *History of the Revolution in England in 1688,* appeared after his death, and was pronounced by Macaulay the best history of the reign of James II. A collection of his miscellaneous works, including his contributions to the *Edinburgh Review,* was published at London, in 3 vols. See *Memoirs* of his life by his son, 2 vols. (Lond. 1835).

MACKNIGHT, *mak-nīt'*, JAMES, D.D.: clergyman of the Church of Scotland: 1721, Sept. 17—1800, Jan. 13; b. Irvine, Ayrshire. He studied at Glasgow University and at Leyden, Holland; and 1753 was ordained minister of the parish of Maybole. In 1769, he was translated to Jedburgh, and thence to Edinburgh 1772, where he died. His principal works are: *Harmony of the Four*

Gospels (1756); *The Truth of the Gospel History* (1763); and *A New Translation of the Apostolical Epistles, with Commentary and Notes* (1795).

McLANE, *mak-lān'*, ALLAN: patriot: 1746, Aug. 8—1829, May 22. He came to Kent co., Del., 1774, and served in the American army throughout the Revolutionary war. In 1775 he fought with the Virginia militia in the Great Bridge conflict near Norfolk; afterward as lieutenant with Rodney's Delaware regiment in the battles of Long Island and White Plains and Princeton. He became captain 1777; commanded the outposts around Philadelphia; took part in the battle of Monmouth 1778, June 28; was with Wayne at Stony Point; and in the siege of Yorktown until the surrender of Cornwallis. He retired after the close of the war with the rank of colonel and was made judge of the court of common pleas of Delaware. In 1790 Washington made him United States marshal of Delaware, which office he held until 1798. In 1808 Jefferson appointed him collector of the port of Wilmington, which he held till his death.

McLANE, LOUIS: American statesman: b. Smyrna, Kent. co., Del., 1786, May 28; d. Baltimore, 1857, Oct. 7. He was the son of Allan McLane (q.v.) and entered the navy at an early age, served as a midshipman under the elder Decatur. Quitting the navy in 1801 he studied law, was admitted to the bar in 1808, and rose to eminence in the profession. He represented Delaware in Congress, 1816-27, when he was chosen United States senator. In 1829-31 he was minister to Great Britain, and on his return home was made secretary of the treasury. In 1833 he declined to sanction the removal of the deposits from the United States Bank, and was consequently transferred by the President to the state department. He held the office of secretary of state till 1834, June, when he resigned and retired from political life. In 1837 he accepted the presidency of the Baltimore & Ohio Railroad, which he held till 1847. In 1845, June, he was appointed by President Polk ambassador to London during the Oregon negotiations, after the settlement of which he resigned. In 1850 he was a member of the convention to reform the constitution of Maryland.

McLANE, ROBERT MILLIGAN: diplomatist: b. Wilmington, Del., 1815, June 23; d. Paris, France, 1898, Apr. 16. He was educated in Wilmington, Baltimore, and Paris; graduated at the United States Military Academy, 1837; served in the Seminole Indian war in Florida; in the Cherokee campaign in Georgia, and on surveying duty in the Northwest Territory; was admitted to the bar and ordered to examine the dike and drainage systems of Holland and Italy 1841; and resigned from the army and began practicing law 1843. He was a member of the Maryland legislature 1845-7; Congress 1847-51; United

States minister to China 1853-5; to Mexico 1859-60; counsel for the Western Pacific Railroad several years; delegate to the national Democratic convention 1876; elected state senator 1877; member of Congress 1878 and 1880; governor of Maryland 1883-5; and United States minister to France 1885-9.

MACLAREN, *ma-klăr'ĕn*, IAN. See WATSON, JOHN.

McLAREN, WILLIAM EDWARD, D.D.: American bishop: b. Geneva, Ontario co., N. Y., 1831, Dec. 13; d. New York, 1905, Feb. 19. He was graduated at Jefferson College, 1851, ordained to the Presbyterian ministry, 1860, and entered that of the Protestant Episcopal Church in 1872. Three years later he was appointed bishop of Illinois; after the subsequent division of the diocese became bishop of Chicago. Among his writings may be mentioned *Catholic Dogma the Antidote of Doubt* (1884).

McLAUGHLIN, *măk-lâk'lĭn*, ANDREW CUNNINGHAM, A.M.: American historical writer: b. Beardstown, Ill., 1861, Feb. 14. He was graduated from the University of Michigan in 1882, from its law school in 1885, was professor of history in that university 1891-1906, and since 1906 has been professor of history in the University of Chicago. He served as director of the bureau of historical research of Carnegie Institution, Washington, D. C., 1903-5, and was managing editor of the *American Historical Review* 1901-5. He has written *Lewis Cass* in *American Statesmen* series (1891); *History of Higher Education in Michigan; Civil Government in Michigan* (1892); *History of the American Nation* (1899); *The Confederation and the Constitution* (1905); and edited Cooley's *Principles of Constitutional Law* (1898).

McLAUGHLIN, MARY LOUISE: American artist: b. Cincinnati. She began to decorate pottery in 1877 and made Losanti porcelain (1898), exhibiting for the first time in the Paris Exposition of 1900. She has been awarded several public honors for her work. Among her published writings are: *China Painting; Pottery Decoration; Suggestions to China Painters; Painting in Oil; The Second Madame.*

MACLAURIN, *mak-law'rĭn*, COLIN: mathematician: 1698-1746, June 14; b. Kilmodan, Argyleshire, Scotland. He was educated at Glasgow Univ., where he took the degree M.A. 1713; and after four years of close study obtained, after severe competitive trial, the professorship of mathematics in Marischal College, Aberdeen. In 1719, he visited London, and was received as member of the Royal Society. Here he published his *Geometria Organica* (1720), an elaborate treatise on the 'description' of curves. He afterward visited France in the capacity of tutor, and while there, wrote a dissertation *on the impact of bodies*, which gained the prize of the Acad. of Sciences 1724. The following year he was appointed assistant to

James Gregory, prof. of mathematics in the Univ. of Edinburgh, and soon succeeded him in the chair. His writings, distinguished for originality, profundity, clearness, and elegance of style, gave strong impetus to mathematical study in Scotland. His works, besides those above mentioned, are—*A Treatise of Fluxions* (Edinburgh 1742), in defense of Newton's discoveries against the attack of Berkeley, and the first in which the principles of fluxions were logically arranged; *A Treatise on Algebra* (1748), left incomplete; *An Account of Sir Isaac Newton's Philosophical Discoveries* (Lond. 1748), also incomplete and posthumous; and a number of papers in the Edinburgh *Philosophical Transactions*. His most important scientific investigations related to the 'form of the earth,' the 'tides,' and the action of the wind on the sails of ships and wind-mills. His memoir on the tides was, 1740, presented in competition for the prize offered by the Acad. of Sciences, but three other competitors, Euler, Daniel Bernouilli, and Father Cavalleri, having appeared, the Academy divided the prize among them all. Maclaurin was prominent 1745, in preparing defenses for Edinburgh against the army of the Pretender.

MacLAWS, *măk-lâz'*, Lafayette: American military officer: b. Augusta, Ga., 1821, Jan. 15; d. Savannah, Ga., 1897, July 24. He was graduated at West Point in 1842; served in the Mexican war till the surrender of Vera Cruz; and at the beginning of the civil war was commissioned as brigadier-general in the Confederate army. He was promoted major-general 1862, May 23, and during the march of Sherman to the sea commanded the defenses of Savannah and had charge of the military district of Georgia. He was appointed collector of internal revenue at Savannah in 1875 and postmaster there in 1876.

MACLAY, *ma-klā'*, Edgar Stanton, A.M.: American author: b. Foochow, China, 1863, April 18. He was graduated at Syracuse University in 1885; was reporter on the Brooklyn *Times* 1886-90, and on the New York *Tribune* 1891-3; served on the editorial staff of the *Tribune* 1893-5, and on that of the New York *Sun* 1895-6. In 1896 he was appointed lighthouse-keeper at Old Field Point, and in 1901 received an appointment at the New York navy-yard. He edited the *Journal* of William Maclay (q.v.), and is the author of a *History of the United States Navy,* which occasioned much controversy and brought about his dismissal from government employ, by order of President Roosevelt, in 1901. The ground of this action, following Maclay's refusal of an official request for his resignation, was a passage in the *History* stigmatizing Rear-Admiral Schley as a 'caitiff, poltroon, and coward' for his conduct in the naval fight off Santiago, Cuba, 1898, July 3. Maclay has also written *Reminiscences of the Old Navy; The History of American Privateers;* etc.

MACLAY, William: American soldier and politician: b. New Garden, Chester county, Pa., 1737; d. 1804. He was educated in his native place; was a lieutenant in the French and Indian wars, taking part in the expedition against Fort Duquesne in 1758, and afterward serving under Gen. Bouquet. He studied law, was admitted to the bar, went to England on behalf of militia officers serving in the French and Indian war, to confer upon their claims for land-grants with the proprietors of Pennsylvania, and on his return became attorney to the Penn family. In the revolution he raised troops and equipped them, was assistant commissary of purchase, and performed some field service. In 1781 he was elected to the Pennsylvania assembly, afterward held other offices in the state, and with Robert Morris (q.v.) was elected to the United States senate, they being Pennsylvania's first representatives in that body. His service there ended in 1791, but in the senate he had shown deep-seated hostility to Washington and his administration, which was the chief distinction of Maclay's senatorial career. In his later years he was a member of the Pennsylvania legislature, and his last public office was that of a county judge. Consult his *Journal*, edited by Edgar Stanton Maclay (q.v.).

MacLEAN, George Edwin, ph.d., ll.d.: American educator: b. Rockville, Conn., 1850, Aug. 31. He was graduated at Williams College in 1871 and at Yale Theological Seminary in 1874; from 1877 to 1881 was pastor at Troy, N. Y.; studied in Germany; and in 1883 became professor of English language and literature at the University of Minnesota. He was chancellor of the University of Nebraska 1895-9, and since 1899 has been president of the University of Iowa. His writings include: *A Chart of English Literature* (1892); *Old and Middle English Reader* (1893); *A Decade of Development in American State Universities* (1898); etc. He has edited: *Ælfric's Anglo-Saxon Version of Alcuini Interrogationes Sigewulfi Prcsbyteri in Genesin* (1883); *An Introductory Course in Old English*, by Wilkin and Babcock (1888); and *An Old and Middle English Reader*, by Zupitza (1889).

MacLEAN, John: American jurist and statesman: b. Morris county, N. J., 1785, March 11; d. 1861, April 4. He removed with his parents to Warren county, Ohio, in 1799, later went to Cincinnati, where he studied law, and was admitted to the bar in 1807, and commenced practice at Lebanon, Warren county, Ohio. He was a member of congress 1812-16, and from 1816-22 judge of the supreme court of Ohio. In July, 1823, he was appointed postmaster-general, the Postoffice Department being then in a very disordered and inefficient condition. Under his administration this branch of the public service was restored to order, and managed with a vigor, method, and economy that soon secured an almost unexampled degree

of applause and public confidence. In 1829 he became associate justice of the supreme court of the United States. In this capacity his charges to grand juries while on circuit are distinguished for ability and eloquence. In the Dred Scott case he dissented from the decision of the court as given by Chief Justice Taney, and expressed the opinion that slavery has its origin merely in power, and is against right, and in this country is sustained only by local law.

McLEAN, JOHN: American educator: b. Princeton, N. J., 1800; d. there 1886. His whole life was spent in Princeton. He was graduated from the college there in 1816, became tutor in the institution in 1818, and was a member of the faculty till 1868, when he resigned the presidency, which he had held from 1854. He published *Lecture on a Common School System for New Jersey* (1829), which in later years had much influence in the establishment of such a system; *History of the College of New Jersey* (1877); etc.

MACLEAN', LETITIA ELIZABETH (LANDON). See LANDON, LETITIA ELIZABETH.

McLEAN, *mak-lān'*, SARAH PRATT: author: b. Simsbury, Conn., 1856, July 3. She was educated at S. Hadley Seminary; taught school in Massachusetts; married Franklin Lynde Greene 1887; and beside magazine sketches has published *Cape Cod Folks* (Boston 1882); *Some Other Folks* (1883); *Towhead: the Story of a Girl* (1884); *Last Chance Junction; Leon Pontifex; Vesty of the Basins* (1892); *Stuart and Bamboo* (1897); *The Moral Imbeciles* (1898); *Flood-Tide* (1901); *Winslow Plain* (1902); *Deacon Lysander* (1904); *Power Lot* (1906); etc. Her *Cape Cod Folks*, a graphic work, full of local color, created a sensation in the locality treated in it, and led to a suit for libel by some citizens, who deemed themselves held up to ridicule in it. Under this pressure objectionable passages were stricken out in subsequent editions.

McLEAN, SIMON JAMES, A.M., LL.B., PH.D.: American sociologist: b. Brooklyn, N. Y., 1871, June 14. He was graduated from the University of Toronto in 1894, was professor of economics and sociology in the University of Arkansas 1897-1902, associate professor of economics in Leland Stanford Junior University 1902-06, and since 1906 has been associate professor of political economy in the University of Toronto. He has published *Tariff History of Canada* (1895).

MACLED, a. *măk'ld* [L. *macŭla*, a spot, a stain]: in *min.*, a name applied to surfaces covered with spots of a hue deeper than, or different from, the main ground of the substance. MACLES, n. plu. *măk'lz*, 'twin crystals' which are united by simple contact of their faces by interpenetration, or by incorporation, these twin forms being often repeated so as to form groups. MACLE, n.

măk'l, another name for *chiastolite*, from being partly light and partly dark colored. It is a silicate of alumina, containing a little magnesia and oxide of iron, and is often used for making beads for rosaries.

McLELLAN, *măk-lĕl'an*, ISAAC: American poet: b. Portland, Maine, 1806, May 21; d. Greenport, L. I., 1899, Aug. 20. He was graduated at Bowdoin College, practiced law for several years in Boston, Mass., and in 1851 removed to New York and gave his whole attention to literature and field sports. His liking for the latter was so strong indeed, and his poems on these themes so numerous, that he gained the title of 'the poet-sportsman.' Some of his early poems, such as *The Death of Napoleon* and *New England's Dead*, attracted much attention. He was the author of *The Fall of the Indian* (1830); *Mount Auburn* (1843); and *Poems of the Rod and Gun* (1886).

MACLEOD, *măc-lowd'*, DONALD, D.D.: Scottish Presbyterian clergyman and author: b. Campsie, Stirlingshire, 1831, March 18. He is a brother of Norman McLeod (q.v.), whom he succeeded as editor of *Good Words* in 1872. He was educated at the University of Glasgow. He held pastorates at Lauder (1858), Linlithgow (1862) and Glasgow (1869), and, like his brother, was chaplain to Queen Victoria. He is chaplain to the King in Scotland. He published *Sunday Home Service* (1885); *Christ and Modern Society* (1893); etc.

MACLEOD, FIONA: pseudonym of William Sharp: Scottish poet and novelist: b. Paisley 1856, Sept. 12; d. Sicily 1905, Dec. 13. A part of his youth was spent in the Hebrides and in the islands of Iona and Arran. His stories and poems have attracted great attention by reason of their freshness of treatment and originality of conception. Among his works are: *Pharais* (1895), a romance; *The Mountain Lovers* (1895); *The Sin-Eater and Other Tales* (1895); *The Washer of the Ford* (1896); *Green Fire* (1896); *From the Hills of Dream* (1896); *The Laughter of Peterkin* (1897); *Through the Ivory Gate* (1901); *The Silence of Amor* (1902).

MACLEOD, *mak-lowd'*, NORMAN, D.D.: clergyman of the Church of Scotland, eminent for his pulpit oratory and his liberal Christianity: 1812, June 3—1872, June 16; b. Campbeltown, in Argyleshire. He was educated at the Univ. of Glasgow, and became minister successively of Loudon in Ayrshire, Dalkeith, near Edinburgh, and the important Barony Church, Glasgow. He gained the degree D.D. 1858, was appointed one of the queen's chaplains in Scotland, and 1869 was moderator of the general assembly of the church. His friendship with the queen and the royal family was unusually close. In 1850, he visited Canada, and in 1867, India, in connection with the missions of the Church of Scotland. Dr. Macleod was of the most liberal school in the Scotch Kirk. 1850-

60 he edited the *Edinburgh Christian Magazine*, and from 1860 was the conductor of *Good Words*, to which he contributed numerous tales, essays, verses, etc., many being republished. Among the most popular of his works are *Reminiscences of a Highland Parish, The Old Lieutenant and his Son, Eastward, The Gold Thread, The Starling, The Earnest Student, The Home Education, Sermons*, etc. Dr. Macleod died at Glasgow. See *Memoir*, by his brother, the Rev. Donald Macleod (1876).

MACLISE, *mak-lēs'*, DANIEL, R.A.: painter of Scotch extraction: 1806, Feb. 2 (or 1811, Jan. 25)—1870, Apr. 25; b. Cork, Ireland. He entered the Royal Acad., London, 1828. In 1833, he exhibited his first picture at the British Institution, *Mokanna Unveiling his Features to Zelica;* and in the same year, *All-Hallow Eve*, and *A Love Adventure of Francis I. with Diana of Poitiers*, at the Royal Academy. Since then, among his principal works may be mentioned—*Robin Hood and Richard Cœur-de-Lion*, and *Merry Christmas in the Baron's Hall* (1838); *The Banquet Scene in Macbeth*, and *Scene from Twelfth Night* (1840); *Play Scene in Hamlet* (1842); *Ordeal by Touch* (1846); and his design of *Shakespeare's Seven Ages* (1848); *The Gross of Green Spectacles* (1850); *Caxton's Printing-office* (1851). The frescoes—each 45 ft. long and 12 ft. high—in the Royal Gallery of the house of lords, depicting *The Meeting of Wellington and Blücher on the Evening of the Battle of Waterloo*, and *The Death of Nelson at Trafalgar*, are admitted to be the finest mural paintings executed in Britain. The only pictures worthy of note exhibited by Maclise, after the completion of these great works, were *Othello, Desdemona*, and *Ophelia* (1867); *The Sleep of Duncan*, and *Madeline after Prayer* (1868); *King Cophetua and the Beggar Maid* (1869); *The Earls of Desmond and Ormond*, posthumously exhibited 1870.

MACLURE', Sir ROBERT JOHN LE MESURIER. See M'CLURE.

MACLURE, *ma-klūr'*, WILLIAM: 1763-1840, Mar. 23; b. Ayr, Scotland. He made a fortune in London, and removed to the United States 1796; served, 1803, as one of the commissioners to settle the French spoliation claims of American citizens; and there became interested in geology. Returning, he undertook the private geological survey of the whole country, visiting nearly every region, and crossing the Alleghanies 50 times. In 1809 he gave the results before the American Philosophical Soc. in *Observations on the Geology of the United States, explanatory of a Geological Map.* In 1817 he published his map, attracting much attention and gaining the title of 'Father of American Geology.' The same year he became president of the Acad. of Nat. Sciences, which office he held till his death; 1816-17 he visited the W. I. islands, and afterward published an account of their geology observed in 20 visits there; 1819 he went to France and Spain, returning 1824.

when he tried to establish an agricultural school for the lower classes; failing, he went to Mexico 1827, and resided there till his death at San Angel. He became president of the American Geological Soc. 1828. The Acad. of Nat. Sciences received from him his 5,000 books, valuable specimens, and $25,000.

MACLUREA, n. *măk-lô'rĕ-ă* [after Dr. *Maclure*]: in *geol.*, a genus of flatly-spiral and operculated shells, often of large dimensions, especially characteristic of Lower Silurian strata.

MACMAHON, *mâk-mâ-ōng'*, Marie Edme Patrice Maurice de, Marshal of France: b. at Sully 1808, July 13; d. near Montargis 1893, Oct. 17. Entering the army, he had a distinguished career in Algeria, and commanded the division that stormed the Malakoff at Sebastopol 1855. He was conspicuous in the Italian campaign of 1859, received a marshal's baton, and was created Duke of Magenta in commemoration of the battle of that name. He was nominated governor-general of Algeria 1864. In the Franco-German war 1870-1, he had command of the first army corps, was defeated at Wörth, and captured, wounded, at Sedan. In 1871, after the war, he was made commander-in-chief of the French army, and 1873 was elected president of the republic, his powers being confirmed to him for a period of seven years. His sympathies were conservative, and at times seemed reactionary; some of his official appointments were deemed to savor of an intention to mold events favorably to the return of the empire and the succession of the young Napoleon to the throne; and suspicion of a *coup d'état* were more than once excited, especially 1877. His refusal to sanction the dismissal of several generals known to be hostile to the republican *régime* occasioned the taking of such a firm position by his cabinet as led to his resignation 1879, Jan.

McMASTER, *mak-măs'ter*, John Bach, a.m., ph.d., ll.d.: American historian: b. Brooklyn 1852, June 29. He graduated from the College of the City of New York in 1872, studied civil engineering, and 1877 became instructor of civil engineering at Princeton. In 1883 he published the first volume of his *History of the People of the United States*, and the same year was appointed professor of American history in the University of Pennsylvania. His *History*, of which six volumes were published in 1905, has become a standard work. It covers a period reaching from the adoption of the constitution in 1789 to the outbreak of the civil war—less than 100 years, but a crucial time for the shaping of the country. The account of the formative time, the day of the pioneer and the settler, engages his particular attention and receives his most careful treatment. He strives to give a picture of social rather than constitutionnal and political growth; and tells the story of national evolution with admirable lucidity and simplicity of style, and always

with an appeal to fact precluding the danger of the subjective writing of history to fit a theory. His other works are: *Benjamin Franklin as a Man of Letters* (1887); *With the Fathers, Studies in American History* (1896); *Origin, Meaning, and Application of the Monroe Doctrine* (1897); *A School History of the United States* (1897); *A Primary School History of the United States* (1901); *Daniel Webster* (1902); *Brief History of the United States* (1903); *The Struggle for the Social, Political and Industrial Rights of Man* (1903); etc.

McMASTER, WILLIAM: Canadian senator and philanthropist: b. Tyrone, Ireland, 1811, Dec. 24; d. Toronto, Canada, 1887, Sept. 22. When 22 years of age, he emigrated to Canada, and after several years' experience in a large wholesale firm in Toronto, commenced business on his own account. He was elected a member of the legislative council for the Midland division of Canada in 1862, and held this seat until he was called to the senate by royal proclamation in 1867. He was prominently identified with many public institutions, notably as president of the Canadian Bank of Commerce, member of the senate of the University of Toronto, chairman of the Canadian board of the Great Western railway, and became widely known by his liberal donations to educational and religious institutions, especially those of the Baptist denomination, of which sect he was a member. McMaster University, Toronto, is named in his honor.

McMASTER UNIVERSITY: Toronto, Canada, is controlled by the Baptist Convention of Ontario and Quebec. It came into existence through the gift of about $1,000,000 by the late Senator William McMaster, of Toronto, but it is really a development of educational work formerly conducted at Woodstock, Ont. In 1857, under the leadership of the Rev. R. A. Fyfe, D.D., subscribers to the funds of a projected college secured from the Canadian parliament an act to incorporate 'The Canadian Literary Institute,' to be located at Woodstock. This school aimed at co-education and provided both literary and theological courses. In 1875 it secured affiliations with the University of Toronto. In 1881, through the liberality of Mr. McMaster, the Toronto Baptist College was instituted and to it was transferred the theological department of the school at Woodstock. The latter continued its literary work, and, without change of corporation, its name was changed to Woodstock College. Toronto Baptist College was affiliated to the University of Toronto in 1885, but as the result of a further donation by Mr. McMaster it was decided to establish a university to grant degrees in the 'several arts, sciences and faculties,' as well as in theology. A charter was secured from the legislature of Ontario in 1887, and all the property and rights of the two separate corporations were vested in McMaster University and placed under the authority of the board of governors, 16 in number (exclusive of the

chancellor), responsible to the Baptist Convention of Ontario and Quebec. The control of all that pertains to the courses of study belongs to the University senate, a body made up of the members of the board of governors, a certain number representing the teaching faculties and others chosen by the graduates in arts and theology. The senate also nominates, subject to the approval of the governors, the chancellor and members of the faculties. Woodstock College, now a school for young men alone, and Moulton College, for young women, are academical departments of the university. Noteworthy provisions of the act of incorporation are that McMaster University is 'a Christian school of learning,' the Bible must be included in the course of study, every member of the teaching staff in theology must be a member of a regular Baptist church in Canada, and all other teachers members of some 'evangelical Christian church.' The first class in arts was graduated in 1894. The total number of students in the three schools of the university is nearly 500.

McMICHAEL, *mak-mīk'l*, MORTON: American journalist, politician, and orator: b. Burlington, N. J., 1807, Oct. 2: d. Philadelphia, Pa., 1879, Jan. 6. After education in the public schools, he studied law at the University of Pennsylvania, and became a member of the Philadelphia bar in 1827. The year previously he became editor of the *Saturday Evening Post*, and as an active politician served for several years on the aldermanic bench in Philadelphia. From 1831 to 1836 he was editor-in-chief of the *Saturday Courier*, and later was connected with the *Saturday News*, the *Saturday Gazette*, the *North American*, and *United States Gazette*, in 1847 consolidating the last two in one journal, of which he was sole proprietor from 1854 until his death. He was mayor of Philadelphia from 1866 to 1869; president of the park commission from its organization in 1867 until his death; and in 1873 was appointed a delegate to the fourth constitutional convention of Pennsylvania. His speeches on public occasions were renowned as models of oratory. A bronze statue was erected to his memory in Fairmount Park.

McMICHAEL, WILLIAM: American soldier and lawyer: b. Philadelphia, Pa., 1841, March 4; d. New York city 1893, April 20. The third son of Morton McMichael, he graduated at the University of Pennsylvania in 1859, but left his law studies in April, 1861, to enlist as a private when President Lincoln issued his first call for troops. He attained rapid promotion to the grade of colonel, served under Generals Thomas, Rosecrans, and Grant. He resumed his interrupted law studies after the war and in 1865 became a member of the Philadelphia bar. During General Grant's first tenure of the presidency he was appointed solicitor of internal revenue of the treasury department, but resigned the office in 1871

on his appointment as United States assistant attorney-general. In 1877 he was appointed United States district attorney for the east district of Pennsylvania, but resigned shortly after to go into private practice. President Garfield appointed him a member of the United States Board of Indian Commissioners; in 1882 he was a candidate for congress on the independent republican ticket; and later became a member of the bar of New York city. Like his father, he was renowned for his oratorical gifts.

McMICKEN, *mak-mĭk'n*, GILBERT: Canadian official and inventor; b. in Wigtonshire, Scotland, in 1813; d. Manitoba 1890, March 6. He emigrated to Canada in his 21st year, lived for several years in the Niagara district, and was appointed to various municipal offices. Interested in telegraphy, he patented two inventions in 1847, and spanned the Niagara river with the first electric wire stretched across it. From 1857 to 1861 he was the representative from Welland county in the Canadian legislative assembly; and as stipendiary magistrate for Canada West during the civil war in the United States, received high commendation from Lord Monk for the able discharge of his duties. He was commissioner of police for the Dominion, and was active in the suppression of the Fenian raid of 1870. He was in charge of the Dominion land-office in Manitoba from its opening until his retirement in 1877, also holding the office of assistant receiver-general and other posts. From 1880-82 he was a conservative representative for Cartier in the Dominion parliament.

MACMIL'LAN, *mak-mĭl'an:* a name for many years prominently identified with English publishing interests. Most important was DANIEL MACMILLAN: b. Upper Corrie, Isle of Arran, 1813, Sept. 13; d. 1857, June 27. He took service with a Cambridge bookseller in 1833, and with Seeley, Fleet street, London, in 1837. He set up in business in London in 1843, but soon removed to Cambridge, and by 1856 had developed a very prosperous trade. He published Hughes' *Tom Brown's School Days* in 1857; but he was chiefly aided by educational publications and the works of Kingsley and F. D. Maurice. Associated with him from 1843 was his brother, ALEXANDER MACMILLAN, previously a school-teacher at Nitshill, not far from Paisley. In 1863 he was made publisher to Oxford University, and in the same year removed the business to London. *Macmillan's Magazine* made its appearance in 1859. The firm maintains a branch in New York, and publishes many university and educational works, as well as considerable fiction, by American authors.

MACMILLAN, CONWAY, A.M.: American botanist: b. Hillsdale, Mich., 1867, Aug. 26. He was graduated from the University of Nebraska in 1885 and has been state botanist of Minnesota and professor of botany in the

University of Minnesota from 1891. He has published *Twenty-two Common Insects of Nebraska; The Metaspermæ of the Mississippi Valley; Minnesota Plant Life;* etc.

McMILLAN, Hugh, D.D., LL.D., F.R.S.E.: b. Aberfeldy, Scotland, 1833, Sept. 17; d. 1903. He was educated at Breadalbane and at Edinburgh Univ.; 1859, became minister of the Free Church in Kirkmichael, Perthshire; 1864, of Free St. Peter's, Glasgow; and 1878, of Free West Church, Greenock. He wrote much for the periodical press, and was author of the following books: *Bible Teachings in Nature* (1866); *Holidays in High Lands, Search of Alpine Plants* (1869); *The True Vine* (1871); *First Forms of Vegetation* (1861); *The Ministry of Nature* (1872); *The Garden and the City* (1872); *Sunglints in the Wilderness* (1872); *Our Lord's Three Raisings from the Dead* (1875); *Sabbath of the Fields* (1875); *Two Worlds are Ours* (1880); *The Marriage in Cana of Galilee* (1882); *The Riviera* (1885); *The Mystery of Grace* (1893); *The Daisies of Nazareth* (1894); *The Clock of Nature* (1896); several of which have been translated into German, Norwegian, Swedish, French, Italian, etc.

McMILLAN, Thomas: American Roman Catholic priest of the Missionary Society of Saint Paul the Apostle: b. Ayr, Scotland, 1851, June 13. He is of Irish descent, and when 3 years old came with his parents to America. In 1874 he entered the Missionary Society of Saint Paul the Apostle. His chief work has been in Sunday-schools. In 1886 he instituted a 'reading circle' movement, which has extended over all the country. In 1889 he was largely instrumental in bringing together, at New York, a large number of editors, journalists and authors from different parts of the United States to discuss ways and means of making the press more effective in uplifting humanity. This meeting was known as that for the promotion of the 'apostolate of the press.' In 1892 he was made chairman of the board of studies of the Catholic Summer School of America, a position which he still holds (1903). In 1897 he was the prime mover in the organization of the 'Child Study Congress' held in New York city.

MACMONNIES, *măk-mŭn'ĭz,* Frederick William: American sculptor: b. Brooklyn, N. Y., 1863, Sept. 20. In his 17th year he became pupil and assistant to Augustus Saint Gaudens, and going to Europe in 1884 he was admitted to the studio of Falguière, and after two years' instruction there opened a studio of his own. In 1889 his statue of *Diana* was honorably mentioned in the salon, and his *Nathan Hale* in City Hall Park, New York, and *James S. T. Stranahan* in Prospect Park, Brooklyn, were much admired in the salon 1891. His *Bacchante* (Salon 1894) was purchased for the Luxembourg. He has been prolific in the creations of the chisel, and his

work is to be seen in Washington Memorial Arch, New York city; the Soldiers' and Sailors' Monument in Indianapolis; in the statues of Prospect Park, Brooklyn; the Battle Monument at West Point; the equestrian statues of General Slocum, Brooklyn (1900), and of General G. B. McClellan, Washington (1906), the statuette of Theodore Roosevelt (1905), etc. Since 1900 he has devoted himself more and more to painting, in which he exhibits delicacy, freshness of design, and a brilliant technique.

McMUR'RICH, James Playfair, A.M., PH.D.: American scientist: b. Toronto, Ont., 1859, Oct. 16. He was graduated from the University of Toronto in 1879, and is professor of anatomy in the University of Michigan. He has published: *Invertebrate Morphology* (1894); *The Development of the Human Body* (1902); etc.

McMURTRIE, *măk-mėr'trĭ*, William, E.M., M.S., PH.D.: American chemist: b. Belvidere, N. J., 1851, March 10. He was graduated from Lafayette College, Easton, Pa., in 1871 as a mining engineer, and was chemist-in-chief of the department of agriculture in Washington 1873-8. After serving as the special agent of that department at the Paris Exposition of 1878 he was professor of chemistry in the University of Illinois 1882-8, and chemist to the state board of agriculture 1886-8. In 1884 he received from the French government the title of Chevalier du Mérite Agricole, and in 1897 was elected president of the American Chemical Society. Since 1905 he has been consulting professor of chemistry at the Polytechnic Institute of Brooklyn, N. Y. He has published *Culture of the Sugar Beet* (1879); *Culture of Sumac* (1879); *Examination of Wools and Other Animal Fibres* (1887); etc.

McNAB, Sir Alan Napier: Canadian statesman: b. Niagara, Ont., 1798, Feb. 19; d. 1862, Aug. 8. He entered the navy as midshipman in 1813, but soon abandoned the navy for the army; was present at the capture of Fort Niagara, and commanded the advance guard at the battle of Plattsburg. At the close of the war he studied law, and practiced in Hamilton, and in 1829 was elected a member of the assembly for the county of Wentworth, and after serving three terms was returned by the electors of Hamilton. He was subsequently chosen speaker of the lower house. During the insurrection of 1837-8 he commanded the militia on the Niagara frontier, routed the insurgents near Toronto 1837, Dec. 7, and a party of American sympathizers having occupied Navy Island in the Niagara river, whence they were cannonading the village of Chippewa on the Canadian side, he sent a party to seize the steamer *Caroline*, employed to convey them supplies, and having driven the crew ashore, set fire to it and sent it over the falls. Although the seizure was made on the American side of the river, the act was approved by the British

government, and for his services to the crown during this insurrection McNab was knighted. In 1854 he was prime minister under the Earl of Elgin, retaining office for a few months under his successor, Sir Edmund Head. On retiring from the premiership in 1856 he was made a baronet.

McNAIR, *măk-nār'*, FREDERICK VALLETTE: American naval officer: b. Jenkintown, Pa., 1839, Jan. 13; d. 1900. He was educated at the United States Naval Academy and served in the *Minnesota* 1857-9. In 1861 he became lieutenant, and during the civil war took part in the bombardment of Forts Jackson and St. Philip, the capture of New Orleans, and the destruction of the Confederate ram *Arkansas*. He was instructor at the naval academy 1867-8, in 1872 became commander, and in 1881 was placed in command of the *Omaha* in the Asiatic squadron. In 1895 he was made admiral, a member of the lighthouse board in 1898, and in July of the last named year was appointed to take charge of Admiral Cervera and other Spanish prisoners of war. Upon their return to Spain he was appointed superintendent of the naval academy.

McNIEL *mak-nēl'*, JOHN: 1784-1850, Feb. 23; b. Hillsborough, N. H.: soldier. He entered the U. S. army as captain 11th infantry 1812, Mar. 12; was promoted major 1813, Aug. 15; led a bayonet charge that secured a victory for the Americans in the battle of Chippewa 1814, July 5; was brevetted lieutenant-colonel for this act, and colonel for services at Niagara July 25; retained in the army after the war; appointed lieutenant-colonel 1st infantry 1818, Feb. 24; brevetted brigadier-general 1824, July 25; promoted colonel 1st infantry 1826, Aug. 28; and resigning his commission was surveyor of the port of Boston from 1830 till his death.

MACOMB, *ma-kōm'*: Ill., city, county-seat of McDonough county; on the Chicago, B. & Q. railroad; about 65 miles northwest of Springfield. It is situated in an agricultural region and in the vicinity are extensive deposits of fire-clay. The first permanent settlement was made about 1841, and the place was incorporated in 1857. The chief manufactures are sewer-pipe, stoneware, and pottery. There is considerable trade in farm products, coal, and lumber. The Western Illinois State Normal School is located here, and the free public library contains about 10,000 volumes. The government is administered, under a charter of 1872, by a mayor, who holds office two years, and a council. The city owns and operates the waterworks. Pop. (1900) 5,375.

MACOMB, ALEXANDER: 1782, Apr. 3—1841, June 25; b. Detroit, Mich. In 1799, he entered the army as cornet of cavalry; 1805, was made captain; 1808, major; and when the war of 1812 began he was lieutenant-colonel of engineers, and adjutant-general. In 1813, he became

colonel of artillery and served at Niagara and Ft. George; 1814, was made brigadier-general, in command of the n. frontier on Lake Champlain. At Plattsburg he commanded the regulars and some militia who sustained the attack of the much larger force of British under Provost; for which he was made major-general and awarded a medal; 1835 he became commander-in-chief of the army, and was in active service for a time during the Florida war. He died at Washington. He published *A Treatise on Martial Law and Court-Martials as practiced in the United States* (Charleston 1809); *A Treatise on the Practice of Court-Martials* (New York 1840); and supervised Cooper's *Tactics and Regulations for the Militia* (Phila. 1836).

MACOMB', WILLIAM HENRY: naval officer: 1818, June 16—1872, Aug. 12; b. Detroit, Mich.; son of Gen. Alexander Macomb. He entered the U. S. navy as midshipman 1834; became lieutenant 1847, commander 1862, captain 1866, and commodore 1870; was engaged in the capture of the Barrier forts at Canton, China, 1856, Nov. 16-22; commanded the *Metacomet* in the Paraguay expedition 1859; served actively through the civil war, commanding the naval force in the capture of Plymouth, N. C., 1864, Oct. 30, and distinguishing himself on the Roanoke river; and after the war was attached to the European squadron and was a light-house inspector.

MACON, *mā'kon:* Ga., city and county-seat of Bibb county; 86 miles by rail from Atlanta, 136 from Augusta, and 197 from Savannah. It lies at the southeastern edge of the Appalachian mountain wall, on both sides of the Ocmulgee river, which is bridged here, but is navigable thence to its mouth all the year round, even at low water, for steamers of three feet draft. Macon is the greatest railroad centre in the state except Atlanta, six lines converging there—the Southern, Central of Georgia, Georgia Southern & Florida, Macon & Birmingham, and Macon, Dublin & Savannah—making eleven lines radiating from it. By through traffic arrangements it is also a part of the Seaboard Air Line, Atlantic Coast Line, and Louisville & Nashville, parlor and sleeping cars running from Macon to all.

Macon lies in the midst of a fast developing cotton district, as well as one of fruit and vegetables, making it a great agricultural market; near hardwood and yellow-pine forests, hills of granite, and deposits of brick and fire clays and the finest kaolin for porcelain, all, with the cotton, furnishing raw material for its important manufactures. In 1900, it had 182 establishments, employing $5,076,005 capital and 3,963 workmen and clerks, paying $1,047,437 in wages, and turning out $6,495,767 in product. By far the greatest of these was then the cotton manufacture, in which Macon was taking a high place and promising to rival the great northern seats of the manufacture: in 1900 its product was $1,237,125.

Every branch of the industry is represented—yarn, duck, cordage, twine, hosiery, and knit underwear; and it employed about a fourth of the total city wage-earners. Second only to this at present, if second, is the manufacture of cottonseed-oil for table use and packing, cottonseed meal and cake for provender and fertilizer, compound lard, plantene, and soap from the oil.

The railroad shops which the many lines have located here turned out some $500,000 of product. Next to these in volume were lumber and planing-mill products, sash, doors, blinds, and interior finish, with a market in all the states east of the Mississippi. The largest vein of kaolin in the country, 30 miles wide and 35 to 70 feet deep, lies within seven miles of Macon. Brick and tile, paving and roofing materials, are all part of the products of the various fine clays. Foundry and machine-shop products, agricultural implements, sewing-machine findings, carriages and wagons, furniture, barrels and firkins (especially for the great oil and lard product), brooms and brushes, saddlery and harness, confectionery, malt liquors, patent medicines, and artificial ice are a part of the thronging industries. The banking business is annually about $150,000,000 in the gross, and the clearing-house totals about $40,000,000.

The city is on elevated sandy ground, with excellent drainage and sanitary conditions, and a mild even climate. It is a notedly handsome place, with immensely wide streets—100 to 180 feet—beautifully shaded; Vineville, a part of the city, in the rear is covered with costly residences, and furnishes a noble view of the city. Central City Park with fair grounds, fully equipped, was laid out in 1870 at large cost; there are also Tatnall, Daisy, and Chickamauga parks. Rose Hill cemetery, half a mile down the river, containing 150 acres, is of widely famed beauty. There are very interesting Indian mounds in the vicinity. It has good trolley service; and an excellent water supply from the Ocmulgee river. There are two daily papers and two public libraries; Mercer University (Baptist, 1831), Wesleyan Female College (1836, the first chartered in the country), St. Stanislaus College (Roman Catholic, preparatory for the priesthood), Mt. De Sales Academy (Roman Catholic), Home for Aged Masons, and the State Academy for the Blind (1852), with a library of several thousand volumes. There is a government building, an Academy of Music, and several charitable institutions. It is governed under the charter of 1893, with a two-year mayor and a one-chambered council. Pop. (1900) 23,272. By an act of the general assembly, two of the principal suburbs were annexed, making the population 30,000. With other suburbs between which the city proper is only an imaginary line, the population is 40,665 in 1910.

Macon was settled about 1822, incorporated as a town in 1823, and received a city charter in 1832. It was

named after Nathaniel Macon (q.v.), of North Carolina.

MACON: Miss., city, county-seat of Noxubee county; on the Noxubee river, and on the Mobile & Ohio railroad; about 108 miles east by north of Jackson. The agricultural lands surrounding the city are almost wholly used for the cultivation of cotton. It has cottonseed-oil mills, cotton gins, and cotton compress. Its trade is chiefly in cotton. Pop. 2,270.

MACON: Mo., city, county-seat of Macon county; on the Wabash and the Chicago, B. & Q. railroads; about 20 miles north of Moberley. Surrounding the city is a fertile agricultural region, well watered and well wooded; and in the vicinity are coal fields. The industrial establishments are foundries, machine-shops, flour-mills, wagon and carriage factories, brick yards, cigar factories, and works where dishwashing machines, shears, and agricultural implements are made. Some of its public buildings are the courthouse, the county insane asylum, public and private school buildings. The city owns and operates the electric-light plant and the waterworks. Pop. (est.) 4,258.

MA'CON, NATHANIEL: 1757, Dec. 17—1837, June 29; b. Warren co., N. C. He left his studies at Princeton, 1777, to join the American army at the opening of the revolutionary war; soon returned to North Carolina and studied law; re-enlisted as private under his brother, Col. John Macon, and served at Ft. Moultrie, battle of Charleston, of Camden, and under General Greene till 1782. Elected to the North Carolina senate he refused pay and pension for his military services, and was a faithful and useful legislator till 1785; though opposing the adoption of the federal constitution. 1791-1815 he served as a democrat in congress; then till 1828 as U. S. senator. 1801-06, he was speaker of the house; and twice declined the postmaster-generalship offered him by Jefferson. He voted for the embargo, and advocated only a defensive war against Great Britain, opposing the enlargement of the navy, privateering, fortification, and all projects of internal improvement. Though offered high executive appointments he always refused every office not the direct gift of the people, and he never recommended any of his family for office. In 1824, he received the electoral votes of Virginia for the vice-presidency; and 1825-27 was president *pro tem.* of the senate. His speeches were brief, pointed, and practical. He was always an extreme 'Jeffersonian Democrat.' In 1835, he served in the constitutional convention of North Carolina; and 1837, as presidential elector on the Van Buren ticket. He believed in the right of secession but not of nullification; opposed giving the ballot to free negroes, land qualifications for voters, state control of works of internal improvement, and all religious tests as conditions of holding office. He was the intimate friend of Jefferson, Madison and Ran-

dolph of Roanoke; was a devout student of the Bible, and a sternly pure and upright man.

MACONNAIS, *mâ-kon-nā':* ancient territory in Burgundy, France, now forming the dept. of Saône-et-Loire (q.v.); cap. Mâcon (anc. *Matisco*). It was occupied successively by the Ædui, the Romans under Julius Cæsar, Germans, Burgundians, Huns, Hungarians, the Carlovingian kings, and Vandals; sold to the king of France 1228; acquired by several dukes of Burgundy; restored to the crown 1416; given by Charles VII. to Philip the Good 1435; and finally restored to the French crown 1477. Its cap. was a Huguenot stronghold in the 16th century, and did not yield to Henry IV. till 1594.

MACOUN, *ma-kôn',* JOHN: Canadian botanist: b. Ireland 1832. He removed to Canada at 18 and from 1868 to 1879 was professor of botany and geology in Albert College, Belleville, Ont. In 1882 he became botanist to the Geological and Natural History Survey of Canada and in 1887 assistant director. He has published *Manitoba and the Great Northwest* (1882); *The Forests of Canada and their Distribution* (1895).

McPHERSON: Kan., city, county-seat of McPherson county; on the Union P., the Atchison, T. & S. F., the Missouri P., and the Chicago, R. I. & P. railroads; about 150 miles west by south of Topeka. The city is the trade centre of an extensive agricultural region in which the chief products are wheat and corn. It has flour-mills, creameries, grain-elevators, brick and lumber yards. Its trade is chiefly in farm and dairy products and in live-stock. Its principal buildings are a court-house, high school, and opera house. It is the seat of the McPherson College, under the auspices of the German Baptists. Pop. (1900) 2,996; (1910) 3,546.

MACPHERSON, *măk-fẽr'sön,* Sir DAVID LEWIS: Canadian statesman: b. Inverness, Scotland, 1818, Sept. 12; d. 1896, Aug. 16. He was educated at the Royal Academy in his native town, removed to Canada in 1835 and after becoming in 1842 a partner in a forwarding firm in Montreal secured in 1851, with others, a charter for a railway from Montreal to Kingston, the beginning of the Grand Trunk railway. In 1872 he became president of the Interoceanic Railway Company. He sat in the legislative council of Canada 1864-7, and in the last named year entered the Dominion senate and was elected its speaker in 1880. He was minister of the interior 1883-5 and was knighted in 1884.

McPHERSON, EDWARD, LL.D.: author: b. Gettysburg, Penn., 1830, July 31; d. there 1895, Dec. 14. He graduated at the Univ. of Penn. 1848; studied law, and engaged in journalism a short time; member of congress 1859-63; clerk of the U. S. house of representatives 1863-73; chief of the U. S. bureau of engraving and printing 1877-78; and clerk of the house of representatives 1890.

his rank as a statistician was very high. He received his degree from the Univ. of Penn. 1877. His publications include *Political History of the United States during the Great Rebellion* (Washington 1865); *The Political History of the United States during Reconstruction* (1870); and *Hand-Book of Politics* (biennially since 1872). He has been editor of the *New York Tribune Almanac* and (American) the *Almanach de Gotha* for several years.

MACPHERSON, *mak-fėr'son*, JAMES: Scotch writer who gained notoriety in literature: 1738-1796, Feb. 17; b. Ruthven, Inverness-shire. After finishing his studies at King's College, Aberdeen, he became a schoolmaster in his native village, published a poem, *The Highlander*, 1758, contributed verses to the *Scots Magazine*, and in the following year, meeting the Rev. Dr. Alexander Carlyle, minister of Inveresk, and John Home, author of *Douglas*, he showed them some fragments of Gaelic verse, of which he also gave them 'translations.' These 'translations' (16 in number) appeared 1760, and were so much relished that the Faculty of Advocates in Edinburgh raised a subscription to enable Macpherson to make a tour through the Highlands for the purpose of collecting more of the poetry. Macpherson was very zealous and successful in the 'discovery' of literary treasures. *Where* he made his discoveries no man knows. He found ancient manuscripts in regions where no one before had suspected their existence, and where no one since has been fortunate enough to obtain any. The result was the appearance at London, 1762, of the so-called 'Poems of Ossian,' under the title *Fingal, an Epic Poem, in Six Books;* and 1763, *Temora, an Epic Poem, in Eight Books.* A storm of controversy soon arose in regard to their genuineness. Its decision ultimately was unfavorable to Macpherson, not as having absolutely invented the whole, but as having set old Gaelic fragments which he had picked up perhaps in the talk of the aged Highland folk —possibly also scraps of Gaelic writing—in long imitative composition of his own; and as having then—which was his great offense—insisted that they were 'translations' (see OSSIAN, POEMS OF). These poems were, however, the making of him in a worldly point of view. He was appointed surveyor-general of the Floridas (1764) with a salary for life, and agent to the Nabob of Arcot—a very lucrative office—1779; entered parliament in the following year as member for Camelford, sat for 10 years, and then retired to an estate which he had purchased in Inverness-shire, where he died. His body was brought back to England, and was actually interred (at his own request and expense) in Westminster Abbey. Macpherson wrote some historical compilations and pamphlets; and translated the *Iliad* into prose—work praised by some Scotch critics, but severely criticised in England.

McPHER'SON, JAMES BIRDSEYE: 1828, Nov. 14—1864, July 22; b. Sandusky, Ohio. In 1853, he graduated first

in his class of 52 at West Point, and was appointed brevet 2d lieutenant, 1854 was commissioned 2d lieutenant; 1858, 1st lieutenant; 1861, captain of engineers, serving on construction duty till the civil war, when he applied for active duty on the field. He was rapidly promoted, until he became major-general of volunteers 1862, Oct. 8, serving on Halleck's staff till the spring of 1862, when he went on Grant's staff, under whom he served as chief engineer at Ft. Henry, Ft. Donelson, Shiloh, Corinth, and Iuka, and June to Oct. having charge of the railroads in w. Tenn. Oct. 2 he took command of a brigade under Rosecrans at Corinth and led the pursuit of Van Dorn's Confederate army; Oct. 14 he was made commander of the division stationed at Bolivar, Tenn.; Nov. and Dec. he commanded the right wing of Grant's army, till the reorganization of the army, 1863, Jan., when he was made commander of the 17th army corps. His corps had a prominent part in the campaign against Vicksburg. At Port Gibson, 1863, May 1, part of it, led by him in person, decided the battle against the Confederates. May 12, with the right wing of the army he totally routed Johnston at Raymond; and two days later his and Sherman's corps again defeated him at Jackson. Two days after that, his corps did the heavy fighting at Champion's Hill, when Pemberton was driven into Vicksburg. In the final assaults, May 19 and 22, his corps formed the centre of the army, but though fighting bravely, was not successful. At the surrender, McPherson was one of the commissioners to fix the terms. His skill and gallantry were specially commented on by Grant, on whose recommendation he was made brigadier-general of the regular army, the appointment to date from 1863, Aug. 1. He was given command of the Vicksburg district after the surrender, and remained there till spring 1864, except during Feb., when he went with Sherman's expedition to Meridian, Miss. He succeeded Sherman as commander of the army of the Tennessee; when in the spring of 1864 the latter took Grant's place as head of the western armies.

At the beginning of Sherman's Ga. campaign, though McPherson did not meet the former's expectations in not at once attacking Resaca and so forcing Johnston to retreat from Dalton eastward, it is still not certain that McPherson's prudence was not wisest. When Sherman with his whole army did attack and defeat Johnston at Resaca, 1864, May 14 and 15, McPherson's corps did its part gallantly. During the rest of May, June, and July there was continual fighting, with bloody battles at New Hope Church, May 26; Dallas, May 28, where McPherson's corps repelled the Confederate attack made specially upon it; Kenesaw Mt., June 27; and around Atlanta, July 19-22, where his corps formed Sherman's left flank. In repelling a furious attack of the combined Confederate forces under Hood, July 22, McPherson was killed.

McQUAID, Bernard John: American Roman Catholic prelate: b. New York city, 1823, Dec. 15. He pursued part of his studies in Canada, but completed his classical course at Saint John's College, Fordham, N. Y., where he was graduated in 1843, and for the next three years held the position of tutor. He studied theology first with the Lazarists of New York city and later at Saint John's College, Fordham, being ordained priest 1848, Jan. Having built churches at Morristown and Springfield, N. J., he was engaged upon one at Mendham when summoned to the newly created diocese of Newark, N. J., 1853. In 1856, Father McQuaid founded Seton Hall College at Madison, N. J., and was its first president, retaining the office for ten years, and its subsequent success has been eminently due to his indefatigable efforts. He was consecrated first bishop of the diocese of Rochester, N. Y., by Archbishop McCloskey in New York city, 1868, July 12.

MacQUEARY, *ma-kwē'rĭ*, Thomas Howard, A.M., PH.D.: American educator: b. Charlottesville, Va., 1861, May 27. He was graduated from the Episcopal Theological School at Alexandria, Va., in 1886, took orders in the Episcopal Church and in 1882 became rector at Canton, Ohio. His religious views having undergone a radical change he was tried by an ecclesiastical council for denial of miracles and suspended from the ministry for six months. He accordingly resigned from it in 1891, Sep., and was for some time in the Universalist ministry. He founded Unity House Social Settlement in Minneapolis from 1900-6; was superintendent of the Parental School in Chicago; and since 1906 has been head of the department of history in the Yeatman High School, St. Louis. He is the author of *The Evolution of Man and Christianity* (1889), and *Topics of the Times* (1890).

MACQUOID', Katherine Sarah Thomas: English novelist: b. Kentish Town, London, 1824, Jan. 26. She was married to T. R. Macquoid, a water-color artist, in 1851. Besides many pleasing volumes of travel, such as *Through Normandy* (1874); *Through Brittany* (1877); *In the Ardennes* (1881); *About Yorkshire* (1883); *In the Volcanic Eifel* (1896); *In Paris* (1900); *Pictures in Umbria* (1905), with her son, Gilbert Macquoid (1896), she has written a long series of novels, not a few of which have been widely read in the United States. Among these may be cited: *Patty* (1871); *In the Sweet Spring Time* (1880); *Little Fifine* (1881); *At the Red Glove* (1885), by some critics considered her best work; *The Haunted Fountain* (1890); *His Last Card* (1895); *The Story of Lois* (1898); *His Heart's Desire* (1903); *A Village Chronicle* (1905); etc.

MACREADY, *mak-rē'dĭ*, William Charles: English tragedian, whose father was the manager of a provincial company: 1793, Mar. 3—1873, Apr. 17; b. London. He

was educated at Rugby; and made his first appearance as Romeo, Birmingham, 1810. For four years he was connected with his father's company, and for two years thereafter sustained leading parts in the provinces. In 1816, Sep., he made his first appearance before a London audience, and gained the applause of Kean, who was one of his auditors. His progress in the higher walks of the drama was slow. In 1819, he made a hit in the character of Richard III., and he afterward adventured on other of Shakespeare's characters with success. In 1826, he made a tour in the United States, and visited Paris 1828. He was lessee of Covent Garden Theatre 1837; and afterward undertook the management of Drury Lane, but lost heavily by it. He visited America a second time 1843; and again 1848, when he barely escaped with his life from a riot in the Astor Place Opera House, New York, occasioned by the jealousy of the admirers of the rival American actor Forrest—in which 22 persons were killed by the soldiers called out to suppress the tumult. On his return home he was engaged at the Haymarket, and his theatrical career was closed 1851, Feb. Shortly afterward a public dinner was given to the great actor. *Macready's Reminiscences* appeared 1875. M. was a fine and impressive actor, but indebted for success more to art than to nature. He succeeded best in the graver characters of the drama. He inherited more of the stateliness of Kemble than of the fire of Kean.

MACRO-, prefix, *măk-rō-* [Gr. *makros*]: long.

MACROBIUS, *ma-krō'bĭ-ŭs*, Ambrosius Aurelius Theodosius: Latin grammarian of the 5th century. He appears to have been by birth a Greek, but literally nothing whatever is known of his life. Two of his works remain, entitled *Commentarius ex Cicerone in Somnium Scipionis*, and *Saturnaliorum Conviviorum Libri Septem*. The former is the best known, and was much read during the middle ages; the latter is in the form of dialogue, and contains many valuable historical, mythological, antiquarian, and critical observations. Of a third work, *De Differentiis et Societatibus Græci Latinique Verbi*, we possess only extracts made in the 9th c. It has been warmly discussed whether M. was a Christian or a pagan: there is no evidence that he was a Christian. The *editio princeps* of M. appeared at Venice 1472; of later editions the best are those of Jan (1852) and Eyssenhardt (1868).

MACROCEPHALOUS, a. *măk'rō-sĕf'ă-lŭs* [Gr. *makros*, long; *kephălē*, the head]: having a large head; in *bot.*, having the cotyledons of a dicotyledonous embryo confluent, and forming a large mass compared with the rest of the body.

MACROCOSM, n. *măk'rō-kŏzm* [Gr. *makros*, long, great; *kosmos*, the world]: the great world; the visible system of worlds; opposed to *microcosm*.

MACRODACTYLS, n. plu. *măk′rō-dăk′tĭlz*, or MAC′RODAC′TYLI, *-tĭl-ī* [Gr. *makros*, long; *dak′tulos*, a finger]: a family of birds having very long toes, including the coots and water-hens. MAC′RODACTYL′IC, a. *-tĭl′ĭk*, having long toes.

MACRODIAGONAL, n. *măk′rō-dī-ăg′ŏ-năl* [Gr. *makros*, long; *dia*, through; *gonĭă*, an angle]: the longer diagonal of a rhombic prism.

MACROGLOSSIA, n. *măk′rō-glŏs′sĭ-ă* [Gr. *makros*, long; *glossa*, the tongue]: an extraordinary hypertrophic enlargement of the tongue, in consequence of which it protrudes from the mouth.

MACROGNATHIC, a. *măk-rŏg-năth′ĭk* [prefix *macro-*; Gr. *gnathos*, a jaw]: long-jawed; term applied by Prof. Huxley to skulls of neolithic age, found in caves and tombs in Belgium, France, and Spain.

MACROMETER, n. *mă-krŏm′ĕ-tĕr* [Gr. *makros*, long; *metron*, a measure]: an optical instrument for measuring inaccessible objects.

MACROOM, *mâ-krôm′:* post and market town of county Cork, Ireland, on the river Sullane, 21 m. w. from Cork, with which it is connected by railway. The town consists merely of a single street, nearly a mile long, and contains some good houses and shops, but most of the dwellings are mean and poverty-stricken. Pop. about 3,500.

MACROPHYLLINE, n. *măk′rō-fĭl′lĭn* [Gr. *makros*, long; *phullon*, a leaf]: in *bot.*, consisting of elongated and extended leaflets.

MACROPODOUS, a. *mă-krŏp′ō-dŭs* [Gr. *makros*, long; *pous* or *poda*, a foot]: applied to a family of crustaceans, the macropods, having enormously long feet; in *bot.*, having the radicle large in proportion to the rest of the body. MACROPUS, n. *măk′rō-pŭs*, the kangaroo, in allusion to the great length of its hind feet. MACROPODIDÆ, family of marsupials (see MARSUPIALIA: KANGAROO).

MACROPOMA, n. *mă-krŏp′ō-mă* [Gr. *makros*, long or large; *poma*, a cover or lid]: in *geol.*, a genus of sauroid fishes peculiar to the Chalk and Wealden—so named from their large opercula, the head being equal to one-fourth of the entire length of the body.

MACROPTEROUS, a. *mă-krŏp′tĕr-ŭs* [Gr. *makros*, great; *pteron*, a wing, the blade of an oar]: long-finned; long-winged.

MACRORHINUS, n. *măk-ro-rī′nŭs* [Gr. *makrorrhinos*, long-nosed]: genus of *Phocidæ* (seals). *M. elephantinus* is the elephant seal, named from its short proboscis when full-grown.

MACROSPORES, n. plu. *măk′rō-spōrz* [Gr. *makros*, long; *spora*, seed]: the large spores found in connection with smaller ones called *microspores* in certain lycopods, and some other cryptogams. MACROSPORANGIA, n.

măk′rō-spō-răn′jĭ-ă [Gr. *anggos*, a vessel]: the cells or theeæ which contain macrospores.

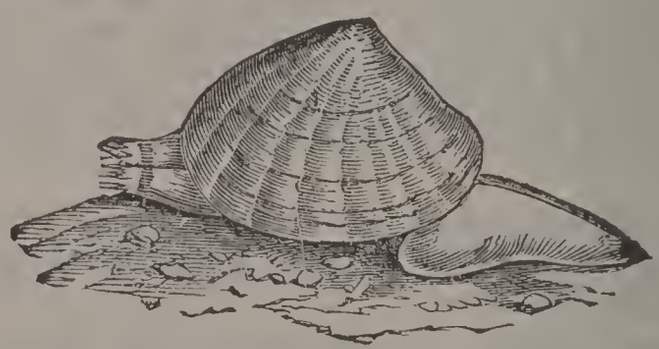
MACROTHERIUM, n. *măk′rō-thē-rĭ-ŭm* [Gr. *makros*, large; *thērĭŏn*, a wild beast]: in *geol.*, a genus of edentate mammals from the Miocene Tertiaries of Europe, having affinities to the African ant-eater, but six or eight times larger.

MACROTOUS, a. *mă-krō′tŭs* [Gr. *makros*, long; *ous* or *ota*, an ear]: in *zool.*, long-eared.

MACROURA, or MACRURA, n. plu. *mă-krō′ră*, or MACROU′RANS, n. plu. *-răns* [Gr. *makros*, long; *oura*, the tail]: a family of decapod crustaceans having long tails, as the lobster, prawn, shrimp, etc. MACROU′ROUS, a. *-krō′rŭs*, long-tailed.

MACTATOR, n. *măk-tā′tėr* [L.—from *mactatus* pp. of *macto*, I sacrifice, I kill]: a murderer, a killer.

MACTRA, n. *măk′tră* [Gr. *maktra*, a kneading-trough, named in fanciful allusion to the shape]: genus of lamellibranchiate mollusks, having a somewhat triangular shell, broader than long, the valves equal; the animal with the siphons united to the extremity, and a large



Mactra Stultorum.

compressed foot. They are sometimes called Trough Shells. The species are numerous, and widely distributed; they burrow in the sand and mud of sea-shores, and of the bottom of the sea. The foot enables them also to move with activity, after the manner of cockles. Some of the species have beautiful shells. Several small species are very abundant on some shores, so that they are gathered for feeding pigs, but not by those who have much regard for the quality of the bacon. The genus M. is type of a family, *Mactridæ*.

McTYEIRE, *mak-tī-ār′*, HOLLAND NIMMONS, D.D.: 1824, July 28—1889, Feb. 15; b. Barnwell dist., S. C.: Meth. Episc. bp. and educator. He graduated at Randolph-Macon College 1844; entered the Meth. Episc. ministry 1845; was first editor New Orleans *Christian Advocate* 1851: editor Nashville *Christian Advocate* 1858: elected bp. 1866; and became pres. of the board of trustees of Vanderbilt Univ. at Nashville, 1873. He received his degree from Emory College, Ga., 1858. He wrote several denominational text-books and histories.

MACULA, n. *măk′ū-lă*, MAC′ULÆ, n. plu. *-lē* [L. *macŭla*, a spot: F. *macula*]: a spot, as on the skin, or on the

face of the sun or moon. MAC'ULATE, v. *-lāt* [L. *maculātus*, spotted]: to stain; to spot; to sully or defile: ADJ. in *bot.*, spotted; blotched. MAC'ULATING, imp. MAC'ULATED, pp. MAC'ULA'TION, *-lā'shŭn*, the act of spotting; a stain or spot. MAC'ULA LU'TEA, in *anat.*, a yellow spot, about $\frac{1}{20}$ of an inch in diameter, on the retina in the axis of the eye; vision is here most distinct. MACULÆ, an order of skin-diseases. But the affections included under the term can hardly be regarded as diseases; they are merely discolorations of the skin, resulting from some change in the production of the coloring matter. The following are varieties:

1. *Lentigo.*—Small yellowish or brownish-yellow irregularly rounded spots denominated freckles, most abundant on the parts chiefly exposed to light, as the face, hands, etc. In some cases these spots are congenital; in other cases they seem produced by exposure to the sun's rays; and in both cases they occur in persons chiefly of fair complexion with light sandy hair. When patches of a larger size than that of ordinary freckles are produced by exposure to the sun, the affection receives the name of *Ephelis.* Congenital spots cannot be removed by any applications; but those which depend on exposure may be treated with soothing lotions or liniments, as an emulsion of sweet almonds, or a mixture of lime-water, with almond oil.—2. *Pigmentary Nævus.*—Congenital dark discoloration of the skin, with little or no elevation of the surface, and often covered with hair. It occurs usually in small spots, but sometimes in large patches. —3. *Albinism* or *Leucopathy.*—For this affection, see ALBINOS.

MACVEAGH, *mak-vā'*, WAYNE, LL.D.: lawyer: b. Phœnixville, Penn., 1833, Apr. 19. He graduated at Yale 1853; was admitted to the bar 1856; captain of cavalry 1862; U. S. minister to Turkey 1870-71; member state constitutional convention 1872-3; chairman of a special committee sent by President Hayes to investigate political affairs in Louisiana 1877; became U. S. attorney-general in the cabinet of President Garfield 1881; but on the accession of President Arthur he retired; ambassador to Italy 1893-97; appointed chief counsel at the Venezuela arbitration conference, The Hague, 1903. He is a persistent advocate of international peace and is deeply interested in civil service reform and municipal improvements.

McVICKAR, *măk-vĭk'ar*, WILLIAM NEILSON, D.D., LL.D., S.T.D.: American Protestant Episcopal bishop: b. New York, 1843, Oct. 19. He was graduated at Columbia College (1865); and at the General Theological Seminary (1868). He was ordained deacon (1867) and priest (1868). Being elected coadjutor bishop of Rhode Island 1897, Oct. 19, he was consecrated 1898, Jan. 27, and on the death of Bishop Thomas March Clark, 1903, Sep., succeeded to the see.

McWHORTER, *mak-hwer'ter*, ALEXANDER, D.D.: 1734, July 26—1807, July 20; b. Newcastle, Del.: Presb. clergyman. He graduated at the College of N. J. 1757; was licensed to preach 1758; installed pastor of the First Presb. Church, Newark, N. J., 1759; sent on special mission to N. C. 1764, and went there again by order of congress to induce the royalists to join the patriot cause 1775; chaplain Knox's artil. brigade 1778; and held his Newark pastorate from 1781 till his death. He was a trustee of the College of N. J. 35 years; member of the committee that framed the constitution of the Presb. Church of the United States; and trustee of the general assembly of the church. He received his degree from Yale 1776.

MA'CY, JESSE, A.M., LL.D.: American historian: b. Henry county, Ind., 1842, June 21. He was graduated from Iowa College in 1873, and has been a member of the faculty there since that date, becoming professor of constitutional history and political science in 1885. He has written *Civil Government in Iowa* (1881); *Institutional Beginnings in a Western State* (1883); *Our Government* (1886); *A Government Text-Book for Iowa Schools* (1887); *The English Constitution* (1897); *Political Parties in the United States, 1846-1861* (1900); *Political Organization and Machinery* (1904); and numerous magazine articles.

MAD, a. *măd* [OE. *mad*, to rave: Swiss, *madeln*, to mutter: Bav. *maden*, to chatter: Dut. *mal;* It. *matto*, foolish, mad: comp. Gael. *amad*, a fool]: disordered in the mind; insane; proceeding from a disordered mind, as a mad action; wild; furious; excited with a violent or unreasonable passion, desire, or appetite; enraged. MAD'LY, ad. *-lĭ*. MAD'NESS, n. the state of being mad; a state of disordered mind; insanity; extreme folly; headstrong wildness of passion; distraction. MAD'DING, a. that is rendered or become mad; mad: N. in *OE.*, the state or condition of the person who has become mad, or is rendered mad. MADCAP, n. *măd'kăp*, a wild, thoughtless, rash person. MAD'HOUSE, n. a house for treatment and cure of the insane. MAD'LIKE, a. exceedingly rash; without reason or understanding. MAD'MAN, n. one deprived of his understanding; one who acts contrary to reason; a lunatic. MAD-STONE, porous stone vulgarly reputed efficacious in hydrophobia; it is applied to the wound made by the bite of a rabid animal, and is supposed to draw out the virus. LIKE MAD, in the manner of a person deprived of reason. TO RUN MAD, to act as one deprived of reason.—SYN. of 'madness': derangement; mania; idiocy; frenzy; alienation; infatuation; aberration; delirium; craziness; lunacy; franticness; fury; rage; monomania; kleptomania; dipsomania; bibliomania; hypochrondria.

MADAGASCAR, *măd-a-găs'kĕr:* third largest island in the world, about four times as large as England and Wales; 230 m. s.e. of Africa, lat. 12° 2′—25° 35′ s., and long. 42°—51° 40′ e.; length, 978 m.; greatest breadth, 350 m.; about 230,000 sq. m.; French colony since 1896; pop. (1901) 3,585,237. Although frequently visited by Europeans since the beginning of the 16th c., M. is yet imperfectly explored. The coasts were carefully surveyed by Capt. W. F. W. Owen, of the British navy, 1823–25; but until lately there has been lack of accurate knowledge as to the geography of the interior. Much light has been thrown upon this by a distinguished French *savant*, Alfred Grandidier, who explored the island 1865–70, crossing it in several directions. Numerous journeys have since been made by members of the London Missionary Soc. and the Friends' Mission; and the new information was embodied in a large map, prepared 1879 by the Rev. Dr. Mullens.

M. consists of two great divisions—(1) an elevated interior region, 3,000 to 5,000 ft. above the sea; (2) a comparatively level country surrounding the high land, not much exceeding 500 to 600 ft. in altitude, and most extensive on the west and south. The elevated interior consists chiefly of Primary rocks, with red clay. It is broken by lines of hills, with numerous fertile valleys, and comprises about a third of the island, n. and e. of its central portion. From this upper region rise the highest mountains, those of Ankàratra, whose summits are nearly 9,000 ft. in height. The lower region of M. is fertile and well wooded, and appears to consist of Secondary strata; on its w. side are three prominent lines of mountains running n. and s. All round the island is a nearly unbroken belt of dense forest, varying from 10 to 40 m. across; and from the s.e. to the n.w. and n. an almost continuous line of extinct volcanic craters has been traced. The climate is temperate and pleasant in the interior highlands, but malarial fever renders the hotter coast-plains unhealthful. The chief rivers flow w. and n.w., and there are many fine bays and harbors on the n.w. coast.

The flora of M. is very rich and varied, and contains large numbers of trees producing valuable timber. Among the most characteristic forms of vegetation are the Traveller's tree (*Urania speciosa*), the Rofia palm (*Sagus ruffia*), the Lattice-leaf (*Ouvirandra fenestralis*), and numerous peculiar orchids and ferns. The fauna is remarkable, and contains several exceptional and ancient forms of life, comprising many species, and even genera, found nowhere else. M. is specially the home of the *Lemuridæ*, there being 36 species already known, including the curious Aye-aye (*Cheiromys Madagascariensis*). The country is remarkably deficient in the larger carnivora and in ungulate animals. Remains of an immense extinct struthious bird (*Æpyornis maximus*) are found, together with its eggs, the largest known (12¼ in. x 9½ in.).

The Malagasy people appear to be derived mainly from the Malayo-Polynesian stock, to which they have numerous affinities. There is an admixture of African blood, especially on the w. side of the island; also an Arab element both on the n.w. and s.e. coasts. It is believed that there are also traces of an aboriginal race. The Hovas, the most advanced, civilized, and intelligent Malagasy tribe, inhabiting the interior provinces, and since the beginning of this century the dominant race, are probably the latest immigrants. All the coast tribes appear closely connected with each other in language; but though there are many dialectical differences, the language of the whole country is substantially one. The cap. is Antanànarivo; pop. officially estimated at 50,000; it is near the centre of the island n. and s., and much nearer the e. than the w. coast. The royal palaces, some large public edifices, and four handsome stone churches in memory of the Christian martyrs under Queen Ràvavàlona I., are buildings somewhat in European style: there are also schools and colleges, French Rom. Cath. churches, and the numerous large Congl. churches of sun-dried brick. The next town in size is Tamatave on the e. coast (pop. 15,000); Majungà, chief port on the n.w. coast, has pop. about 6,000.

The principal exports of M. are cattle, hides, gum-copal, india-rubber, and rice; and coffee is being cultivated by Creole settlers. The chief trade is from the e. ports to Mauritius and Bourbon. The soil is fertile, and could supply practically unlimited quantities of all tropical productions. Iron is abundant; copper and silver have been discovered, and probably gold exists; but these metals are not worked. As there are no roads or wheeled vehicles, the country is yet very backward in civilization, although there is no lack of manual skill among the people, who excel in weaving, straw-work, carpentry, and the smelting and working of metals. The Malagasy have no ancient literature, but their numerous proverbs, songs, and folk-tales, and their oratorical abilities, give ample proof of intellectual acuteness. In their heathen state they are very immoral and untruthful, and cruel in war; but they are also courageous, affectionate, and firm in friendship, kind to their children and their aged and sick relatives, law-obeying and loyal, very courteous and polite, and most hospitable. Though retaining some traditions of a Supreme Being, they practiced a kind of fetishism, together with divination, curious ordeals, and ancestor worship.

M. was known to and visited by Arab merchants at least a thousand years ago; and settlements were formed by them, as well as by Indian traders, in very early times. It is mentioned by Marco Polo under the name of *Magaster;* but the first European who saw the island was the Portuguese Soares 1506. The Dutch had for a time some settlements; and the French made persistent efforts for nearly two centuries to maintain military posts, but without much success. But they still retain

the little island of Ste Marie (e. coast); [illegible] they obtained the island of Nòsi-bé (n.w. coast); and 1882 they made claim to a protectorate over part of the Sakalava territory on the n.w. coast. In 1883 they bombarded several coast towns, and occupied the port of Tamatave.

Till the middle of the 17th c. M. was divided into a number of independent chieftaincies: about that time the Sàkalàva, a warlike tribe on the s.w. coast, made themselves masters of the whole w. half of the island, as well as of several interior provinces. But in the early part of this century the Hovas, led by two energetic chiefs, Impòina and his son Radàma I., threw off the Sàkalàva yoke, and with the aid of English arms and discipline made themselves virtually kings of Madagascar. They conquered the e. and central provinces, but elsewhere the Hova authority is merely nominal. Radàma (the Peter the Great of M.) abolished the export slave-trade, and gave encouragement to missionaries from the English Congl. churches, who commenced work at his capital 1820. They reduced the language to a written form, gave the people a literature, formed numerous schools, founded Christian churches, and introduced many of the arts of civilized life. But the accession of the Queen Ràvanàlona I., 1828, gradually led to repressive measures; all missionaries were expelled 1836, and a severe persecution of the native Christians ensued, in which great numbers perished, preferring as in the early ages of the gospel to die rather than to recede from their confession of Christ. Europeans generally also were for some time excluded from the island. The queen's decease, 1861, ended this period of terror, and M. was reopened to Europeans at the accession of her son, Radàma II. Owing to the young king's follies, and to intrigues with the French, he was put to death 1863, and his wife, Ràsohérina placed on the throne. During her reign (1853–68), steady advances were made, and treaties of commerce concluded with England, France, and America. At the accession of Queen Ràvanàlona II., she and her prime minister, convinced of the beneficence and truth of Christianity, which was becoming an important power in the country, declared themselves Christian disciples. The queen and her husband, and many of the nobles, were baptized; and the burning of the royal idols in the following year (1869) caused the whole population of the central province of Imérina and Bétsiléo to put themselves under instruction. Since that time about 1,200 Christian churches have been formed, mostly under care of the London Miss. Soc. (with 72,000 communicants), and nearly 900 schools with 50,000 children under instruction; several colleges and training institutions, as well as hospitals and dispensaries, have been established; while the mission presses are actively at work providing a native literature. Many and great reforms have been wrought, and the more open forms of immorality have been prohib-

ited by law. The Congl. missionaries had faithful and exceedingly helpful co-workers in agents of the Society of Friends from England. There are also a few Norwegian missionaries. In 1879 all the African slaves in the country were set free; and efforts have been made to improve the military system and the administration of justice, to codify the laws, and to form a kind of responsible ministry. M. is still largely heathen. Rànavàlona III. ascended the throne 1883

Prior to 1895 the govt. was an absolute monarchy, the queen being assisted by a council of nobles and heads of clans chosen by herself. A French resident, however, with a military escort, resided at the court and controlled foreign relations, so that the country was virtually a French protectorate. Much friction prevailed 1893–4 between the government and the French authorities, and finally France decided to make her protectorate of the island effective. The M. govt. declined to submit, and so a French expedition was prepared. After overcoming the climatic difficulties and surmounting the many natural obstacles to transport, the capital was entered 1895, Sep. 30. Gen. Metzinger was appointed milit. gov. of the city, and negotiations for peace, subject to the ratification of the French republic, were concluded. Affairs soon settled down. The treaty recognized the French protectorate with its power to maintain in the country the forces necessary to uphold the protectorate. The resident general was given control of the interior administration of the island and also of its exterior relations.

In 1896, Dec. 1, M. Laroche was appointed resident-general, and M. Paul Bourde sec.-general of the residency. Later that month news was received of the assassination of Mr. and Mrs. Johnson, the Friends' missionaries at Arivonimamo, on Nov. 22. On Dec. 11 a decree placing the country's affairs under the control of the French colonial office was signed. Owing to the anti-foreign feeling existing throughout the country, all Europeans were ordered to resort to the capital (Dec. 13).

In France public opinion condemned the treaty concluded with the queen by Gen. Duchesne, and M. Laroche took out with him a new convention maintaining the queen with all her prerogatives and honors in the island, subject to the control of the resident-general, but giving France sovereign rights, especially as to foreign relations and the customs system.

In June (1896), when the Méline ministry came into power in France, M. Hanotaux, as foreign minister, brought in a bill declaring M. a French colony, and this was carried by the chamber of deputies June 21. The existing treaties between M. and foreign powers thus lapsed. It was announced that, though the Hova governors could not be reinstated, native administrators would, as far as possible, be employed. The immediate emancipation of all slaves was promised.

In July (1896) Rainilaiarivony, the ex-premier, died and revolutionary disturbances, fostered by leading Hovas, broke out and many whites were massacred. The small

number of French troops on the island made it impossible to quell the disturbances, and by Sep. over 20,000 men were in insurrection. On the 21st M. Laroche was recalled and Gen. Gallieni was appointed resident general and commander-in-chief. On the 28th he court-martialled and shot two Madagascar officials of high rank, one the queen's uncle. He declined to call on the queen, asserting it was her duty to visit him, and this she did, but subsequently she was exiled. Not many days after the flag of Madagascar was abolished, being replaced by the French tricolor.—See Ellis's *History of Madagascar* (1838), *Three Visits to Madagascar* (1858), and *The Martyr Church* (1870); Sibree's *Madagascar and its People* (1870), and *The Great African Island* (1880); *L'Ile de Madagascar*, by E. Blanchard; *Histoire physique, naturelle, et politique de Madagascar*, by A. Grandidier (i.-iv., Par. 1876-80); Dawson, *Madagascar: its Capabilities and Resources* (1895); Keller, *Madagascar, Mauritius and Other East African Islands* (1900).

MADAM, n. *măd'ăm:* colloquially contracted MA'AM, *măm* [F. *madame*, madam—from *ma*, my; *dame*, lady: L. *mĕă domĭna*, my lady]: title now used in addressing women, especially married women, of every degree above the lowest; formerly applied only to ladies of rank: it is the French equivalent to our 'Mistress' which we abbreviate to Mrs. and absurdly pronounce Missis. It is *colloquially* a term of address for mistress or lady. MESDAMES, *mā-dâm'*, plu. of *madam;* though some French phrases admit of plu. *madames* or even *madame.*

MADAME BOVARY, *mă-dăm bō-vâ-rē:* a novel by Gustave Flaubert, which appeared in 1856, when the author was 35. It was his first novel, and is regarded as the book which founded the realistic school in modern French fiction—the school of Zola and Maupassant. The novel is a powerful, unpleasant study of the steps by which a married woman descends to sin and suicide.

MAD'-APPLE: name given sometimes to the Apple of Sodom (*Solanum Sodomeum*), sometimes to the fruit of the Egg-plant (q.v.) and sometimes to the large Galls (q.v.) known as *Mecca* or *Bussorah Galls.*

MADAR'. See MUDAR.

MADDEN, v. *măd'n* [from MAD, which see]: to make mad; to become mad; to act as one mad. MADDENING, imp. *măd'nĭng,* making mad or very angry. MADDENED, pp. *măd'nd,* rendered mad.

MAD'DEN, FREDERICK WILLIAM: English librarian: b. London, 1839, Apr. 7. He is a son of Sir Frederick Madden, a noted antiquary, and was chief librarian of the Brighton Public Library 1888-1902. He is a member of various numismatic societies, and among other works has published *Handbook of Roman Numismatics* (1861); *History of Jewish Coinage and Money in the Old and New Testaments* (1864); *The Coins of the Jews* (1881).

MADDER, n. *măd'dĕr* [AS. *mæddere;* Icel. *madra;* Dut. *meed*, madder], (*Rubia*): genus of plants whose root is much used in dyeing red. MAD'DERING, n. the process of dyeing with madder.—*Madder* is a genus of plants of nat. ord. *Rubiaceæ*, very nearly allied to the genus *Galium* or Bedstraw (q.v.), and differing from it chiefly in having a juicy fruit resembling two small berries growing together. The species are found in tropical and warmer temperate parts of the old and new worlds. The most important is the COMMON M. or DYER'S M. (*R. tinctorum*), native probably of s. Europe as well as of Asia; now very extensively cultivated in most European countries, the E. Indies, China, etc. It is a perennial, with weak stems and whorls of 4–6 elliptic or lanceolate glossy leaves, the stem and leaves rough with sharp prickles; small greenish yellow flowers, and black fruit. —Munjeet (q.v.), or INDIAN M. (*R. munjista* or *cordifolia*), ranks next in importance.—The roots of *R. peregrina* and *R. lucida* also are used in parts of the Levant. *R. peregrina*, found in s.w. England, is called WILD MADDER: it is very similar to *R. tinctorum*. The roots of *R. relbun* and *R. Chilensis* are used in Chili and Peru.

There is no material of greater importance to dyers than M. (*R. tinctorum*), not only from the great beauty of the colors obtainable from it, but also from the ease with which it can be worked, and the great variety of its applications. Although the M. plant thrives best in warm climates, it may be and is successfully cultivated in northern districts. The Dutch province of Zeeland has long been celebrated for its large crops of M.; and until about 40 years since, British dyers rarely used any other than Dutch M., which was always sent ground and packed in large casks; but with the improvements in dyeing, it was discovered that the roots grown in warmer localities had much superior qualities, and could be made to produce other and more beautiful shades of color. Besides genial temperature, M. requires rich, deep soil and careful cultivation. It is propagated usually by cuttings or by shoots from the stocks of old plants; these are set about 12 inches apart, and in rows, three ft. from each other; the planting is done in spring; and sometimes the roots are lifted at the usual harvest-time for madder (Oct. or Nov.). In France and Germany, the markets are supplied with one year old (called by the Germans *röthe*), 18 months old, and three years old, which last is the best, and called by the Germans *krapp*, or M. *par excellence*. The roots are carefully raised with forks, to prevent breaking if possible; and after the soil is thoroughly shaken off, they are dried in stoves, and afterward thrashed with a flail, to remove the loose skins and any remaining soil still adhering; they are then cut, or broken in pieces, and packed for sale, or they are sent to the mills to be ground. In Turkey and Italy, where the solar heat is great, the stove is dispensed with, the roots being dried in the sun. The more the roots are freed from the epidermis, the better

the quality of the M.; hence, before it is ground in France, many manufacturers employ mechanical means, chiefly sieves worked by machinery, which rub off and separate the soft, dark-brown skin which covers the roots—this process is called *robage*. One-year-old roots cannot be profitably dressed in this way, and are therefore ground with the epidermis. Much of the inferior Dutch M. is also ground without dressing, and is called *mull* in trade. The grinding is effected in mills with vertical stones, and the meal is passed through sieves of different degrees of fineness, which gives rise to various qualities in the market. These qualities are numerous, and have special marks to distinguish them, well known to merchants. The M. from Turkey and from India never comes to western countries ground; the roots are merely broken into pieces an inch or two in length, and packed in bales. Very small quantities of M. occasionally come from Russia; it is the produce of the govt. of Baku, on the Caspian Sea, and is said to be the finest in the world.

As might be expected of a substance of such vast commercial and manufacturing value, M. has undergone most elaborate chemical researches. Its dyeing quality has been known for at least two thousand years, and its medicinal qualities are mentioned by Pliny and Dioscorides. Pliny, referring to its value as a dyeing material, says: 'It is a plant little known except to the sordid and avaricious, and this because of the large profits obtained from it, owing to its employment in dyeing wool and leather.' The M. of Ravenna was, according to Dioscorides, the most esteemed. Its cultivation in Italy has never been discontinued; and under the present enlightened government, it has received such impetus that the exports of the Neapolitan provinces alone, in one year, exceeded in value $1,200,000. It was about the beginning of the 19th c. that the coloring matter of M. began to attract especial attention. It had long before been noticed that cattle which used the green parts of the plant as fodder had a red color communicated to their bones, which was removed only by discontinuing this kind of food for a considerable time. This showed the coloring matter to be capable of isolation; dyers also began to suspect that the color produced was a combination of two—one red and the other a purplish brown. But Roubiquet, French chemist, about 1820, demonstrated that M. contains two distinct colors, capable of being isolated and used separately; he called them Alizarine and Purpurine—the former, he asserted, gave the bright red, and the latter the purple red colors. Practically, Roubiquet's statement may be held correct; but the recent and more elaborate researches of Dr. Schunck, of Manchester, England, have shown the composition of M. to be very complicated. At the meeting of the British Assoc. 1861, he showed the following chemical principles, all obtained from this remarkable root: 1. Rubianine; 2. Rubianic Acid; 3. Rubianite of Potash; 4.

Purpurine; 5. Chlorrubian; 6. Phthalic Acid; 7. Alizarine; 8. Rubiadine; 9. Chlorrubiadine; 10. Rubiafine; 11. Rubiacine; 12. Rubian; 13. Verantine; 14. Perchlorrubian; 15. Rubiagine; 16. Grape-sugar; 17. Succine. Artificial alizarine, first produced 1869, is manufactured on a large scale, and is now extensively used by dyers. It is one of the numerous series of aniline colors.

Dyers employ madder for giving the celebrated Turkey-red to cotton goods, and for this purpose use means for developing the alizarine; and for purples, lilacs, and pinks, which are obtained by means of the purpurine.

MAD'DOX, Richard Leach: English physician and chemist: b. Bath, England, 1816, Aug. 4; d. Portswood, Southampton, 1902, May 11. He studied medicine at University College, London, but was graduated M.D. at Edinburgh. In early life he settled and practised his profession in Constantinople, and here first took up the study of photography. He subsequently left the Bosphorus for Smyrna and was a civil surgeon in the military hospitals at Scutari during the Crimean war, and finally settled at Woolston, near Southampton, England. It was during his residence at Woolston, which lasted until 1874, that he worked out the process which has revolutionized the art of photography, by substituting the gelatino-bromide for the collodion plate. With him originated the gelatino-bromide dry plates to take the place of the wet collodion plates which, besides other inconveniences, sometimes produce an atmosphere which is dangerous to the operator's health. There have been more than one claimant to the credit of this discovery, but it is decided by the *Scientific American* that Dr. Maddox is entitled to all the honor of the invention. The sub-committee of the Committee of Sciences and Arts of the Franklin Institute of the state of Pennsylvania awarded him the Scott Legacy medal and premium as the author of the invention.

MADEIRA, n. *ma-dē'ra:* a highly esteemed wine produced in the island of *Madeira* (q.v.). Madeira nut, edible fruit of a large timber tree (*Suglans regia*); often called the English walnut.

MADEIRA, *ma-dē'ra*, Pg. *mâ-dā'ē-râ:* island (one of a group of five known as the Madeiras—three being uninhabited rocks) in the n. Atlantic Ocean, off the n.w. coast of Africa, from whose nearest point it is 390 m. distant; lat. 32° 43′ n., long. 17° w.; 280 m. n. of Teneriffe, in the Canaries, and 620 m. s.w. of Lisbon. Madeira, and the other islands of its group, form a province of Portugal, with 505 sq.m.; pop. (1900) 150,528, including the adjoining small island of Porto Santo, of whom 200 are English resident. The three uninhabited islands, known as *Desertas*, are about 11 m. s.e. of Madeira; they present on all sides almost inaccessible precipices. The largest is more than 6 m. long, and its highest point is 2,000 ft. above the sea. The Desertas are conspicuous

the sea-ward views from Funchal (q.v.). The island of Madeira is wild and grand in scenery. Its coasts are steep and precipitous, rising 200 to 2,000 ft. above sea-level, comprising few bays or landing-places, and deeply cut at intervals by narrow gorges, which give to the circumference the appearance of having been crimped. From the shore, the land rises gradually to its highest point, the Pico Ruivo, 6,050 ft.; there are several other peaks more than 4,000 ft. high. It is remarkable for deep valleys, the most noted being that of 'Curral,' which from brink to bottom has a depth of 2,060 ft. Madeira is of volcanic origin, and slight earthquakes sometimes, though rarely, occur. The lowest portions of the island abound in tropical plants, as the date-palm, banana, custard-apple, mango, sweet potato, Indian corn, coffee, sugar-cane, pomegranate, and fig. The fruits and grains of Europe are cultivated to an elevation of 2,600 ft. above sea-level, and the vine and sugar-cane on the lower grounds; above these are found timber (including the chestnut, whose fruit is used extensively by the inhabitants), pine (*Pinus maritima*), used as fuel; fern, grass, and heath, and the scant herbage of alpine regions. Madeira produces 80 or 90 plants peculiar to itself, but the flora in its general characteristics resembles that of countries around the Mediterranean Sea. The grape disease has, within recent years, been almost universal, and wine has not been made in such quantity as formerly. Madeira has no indigenous mammalia, but the ordinary domestic animals, with rabbits, rats, and mice, have been introduced by the Portuguese. The climate is remarkable for constancy. There is a difference of only 10° between the temperatures of summer and winter; the thermometer in Funchal (cap. of the island) showing an average of 74° in summer, and of 64° in winter. The temperature and constant warmth of its climate has made it a favorite resort for invalids affected by pulmonary disease. Besides the English church, there are other places of worship, including a Presb. church in connection with the Free Church of Scotland. The educational institutions comprise the Portuguese College and Lancasterian and government schools. Funchal (q.v.) is the port of the island. The imports are chiefly cotton, woolen, and linen manufactured goods, iron, flour, earthenware, Indian corn, rice, oil, and timber; exports, wine, sugar, citron, embroidery, wicker-work, coal, salt-beef, and hides. The vine was introduced 1421; the grapes mostly are white. The varieties of wine most sought after, before the oidium disease interfered with the culture, were Malmsey, dry Madeira, Sercial, and Tinto. The Madeira wine is imitated in Europe; genuine Madeira is rare.

The inhabitants of Madeira are of mixed Portuguese, Moorish, and Negro descent; they are of vigorous frame, lively, religious, and industrious. Madeira Island was

formerly covered with forests, whence its name—the Portuguese word *madeira* signifying timber. The group to which this island belongs, sometimes called the Northern Canaries, was discovered 1416, and was colonized by the Portuguese. See White's *Madeira* (2d ed. 1860); Miss Taylor's excellent work *Madeira* (1882).

MADEIRA, or MADERA, *mâ-dā′râ*, or CAYARA, *kī-â-râ′:* important river of Brazil, affluent of the Amazon, has its origin in the confluence of several rivers, the chief of which are the Beni, Mamore, Madalena, and Stanez, lat. about 10° s. It has a n.e. course of 700 m. for the last 500 m. of which it is navigable, the upper 200 m. being obstructed by numerous cataracts; and it falls into the Amazon in lat. 3° 25′ s., long. 59° 45′ w. Including the Mamore, the entire length is about 1,500 miles.

MADEMOISELLE, n. *măd′mwă-zĕl′* or *măd′mō-ă-zĕl′* [F.—from *ma*, my; *demoiselle*, damsel, young lady]: the title given to a young unmarried Frenchwoman in France; a miss.

MÂDHAVA: appellation of the Hindu god Vishn′u (q.v.), frequent inHindu mythology and Sanskrit poetry.

MÂDHAVÂCHÂRYA (i.e., *Mâdhava*, the Achârya, or spiritual teacher): one of the greatest Hindu scholars and writers that graced the mediæval literature of India: b. probably near the beginning of the 14th c.; d. at the age of 90 years; reported to have been native of Pampa, village on the Tungabhadrâ river. He was prime-minister under the kings of the Deccan. M. is famed for his numerous and important works relating to the Vedic, philosophical, legal, and grammatical writings of the ancient Hindus. His learning and wisdom were so eminent, that he was supposed to have received them from the goddess Bhuvanes′warî (consort of S′iva), who, gratified by his incessant devotions, became manifest to him in a human shape, conferred on him extraordinary knowledge, and changed his name to Vidyâran′ya (Forest of Learning), a title by which he is sometimes designated in Hindu writings. All the differing traditions about M. agree in ascribing the origin of Vijayanagara to Mâdhava. Among his works, the principal are his commentaries on the Rig-, Yajur-, and Sâma-veda (see VEDA): a summary account of 15 religions and philosophical systems of Indian speculation; some treatises on the Vedânta philosophy; and a grammatical commentary on Sanskrit radicals and their derivatives. His chief work is the series of his commentaries on the Vedas, indispensable to one who seeks to penetrate the sense of those ancient Hindu works. Sundry inaccuracies—whose correction however is usually afforded by himself—have been unduly exaggerated by some modern scholars in Sanskrit, who, discarding his aid in establishing the true sense of the Vedas, have given to the public commentaries whose inferiority—it is asserted—becomes clear on comparison with his. Some of Mâdhava's works seem to have been lost.—See VEDA.

MADHU'CA. See Bassia.

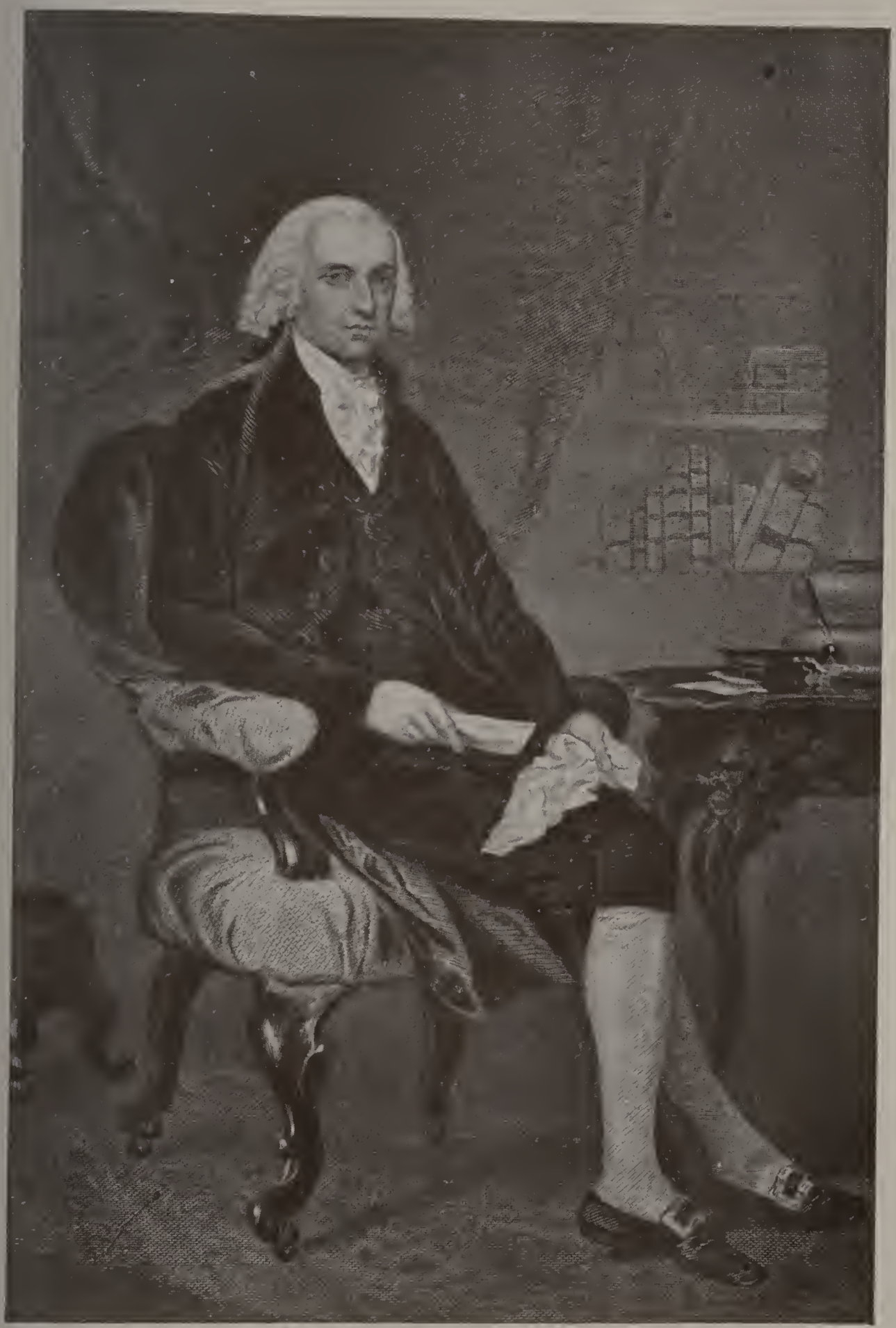
MADIA, *mā'dĭ-a* (*Madia*): genus of plants of nat. ord. *Compositæ*, sub-ord. *Corymbiferæ*, having seeds without pappus, the outer ones situated between the leaves of the involucre, the flowers yellow, the exterior ones rather shortly ligulate, those of the disk tubular. The plants of this genus are annual, of upright habit, rough with glandular hairs, and very viscid; they are important for their seeds as a source of vegetable oil. *M. sativa*, native of Chili, there called *Madi* or *Melosa*, is generally cultivated as an oil-plant. It is ⅔ ft. high, has ovatolanceolate, entire leaves; the flowers terminal, and crowded on the leafy branches. It has been known in Europe since the beginning of the 19th century, but was cultivated in the fields as an oil-plant first in 1839. The results of experiments in its cultivation have not met all expectations; yet it deserves attention, as it is only annual, does not suffer from frost, does not demand very good soil, and produces excellent oil. Madia oil is almost entirely inodorous, of agreeable taste, and suitable for oiling machines.

MADISON: city of Indiana, county seat of Jefferson county; on the n. bank of the Ohio river, 90 m. below Cincinnati, 44 m. above Louisville, with steamers plying daily both ways. Madison is on the Pittsburg, Cincinnati, Chicago & St. Louis railroad. It was founded 1808, has a fine location with a background of hills and is safe from the highest floods. The hills on the n. of Madison are nearly 400 feet high. Madison is an important trade-centre. Its most important industries include the construction of steamboats, engines and boilers. There are large cotton and woolen mills at Madison, also cooperage establishments, chemical works, breweries, flouring mills, starch factories, paper mills, factories for the making of hubs, spokes, sashes, doors, furniture, tacks, etc. Churches, public and parish schools, are numerous. St. Gabriel's Academy is at Madison. The government is vested in a mayor, who holds office two years, and a council. The city owns and operates its water-works. Pop. (1900) 7,835; (1910) 6,934.

MADISON, *măd'ĭ-son:* borough, Morris county, N. J.; on the Delaware, Lackawanna & Western railroad; 4 m. s.e. of Morristown, 28 m. w. of New York. It is beautifully situated in the mountains, and contains the residences of many business people of New York and Newark. Although one of the oldest places in the state, incorporation was not consummated until 1889. Madison is the seat of Drew Theological Seminary (q.v.). St. Elizabeth College is at the Convent Station nearby. Madison is famous for rose-cultivation and other floricultural pursuits. There is a beautiful park in the borough. The borough is governed by a mayor and council. The term of office of the mayor is two years. The electric-light and water-supply plant are owned and operated by the municipality. Pop. 4,300.

MADISON.

MAD'ISON: city, cap. of Dane co., and of the state of Wis.; on the Chicago Milwaukee and St. Paul and other railroads; 75 m. w. of Milwaukee, 130 m. n.w. of Chicago; 210 ft. above Lake Michigan, 788 ft. above sea-level. It is beautifully situated in the four-lake region, on a prairie isthmus between Lakes Mendota and Monona, with Lakes Waubesa and Kegousa near by—all discharging into the Catfish tributary of Rock river. It is 3 m. long and 1 m. wide. Its streets are wide and regular, and adorned with costly residences. M. has excellent water and sewage works, gas and electric light plants, and street railroad service. Among the notable buildings are the state capital, of limestone (cost $500,000), in the centre of a picturesque park of 13 acres; U. S. post-office and court house building (cost $400,000); co. court house and jail, near the park; Univ. of Wis., with its cluster of attractive buildings, 1 m. w. of the capitol; Washburn Observatory, Wis. Academy of Science, Art and Letters. Wis. Geological and Natural History Survey, the State Historical Society, state hospital for the insane, on the n. shore of Lake Mendota, 4 m. n. of the capitol; 569 ft. long with 393 acres of land and Soldiers' Orphans' Home, on the shore of Lake Monona, 1 m. from the park. The Observatory library contains 80,000 volumes; that of the State Historical Society, 135,000, also 130,000 pamphlets and a large museum. The State Historical Society headquarters building is one of the handsomest in the United States. It is constructed of Indiana limestone, Ionic style, and contains many valuable mementoes. The public library, a Carnegie gift, is in its new building. M. is famous for its fine roads maintained by public subscription. M., which was so named in honor of James Madison, is frequently selected for educational Conventions. It is the annual meeting place of the University Summer School and the Columbia Catholic School. There are many handsome churches and large public and private school buildings. The Academy of the Sacred Heart and a branch of the Battle Creek Sanitarium are at M. The industries of M. are important and include stereotype and other foundries and machine shops, flour mills, carriage, boot and shoe, sash, door, blind, tool and agricultural implement factories. The manufacture of blank books is one special feature of the city's industries. There are several National and Savings Banks, a Federal building and many large wholesale and retail commercial structures in the city. The people of M. are imbued with a vigorous and progressive spirit and this is reflected in the attitude of the City administration. Every department is conducted along the most improved lines. Libraries are numerous and are largely patronized. The daily, weekly and monthly publications are numerous, representing many fields of thought and progress. M. was made the cap. of Wis. 1836, when there was but one log cabin on the prairie. Pop. (1880) 10,324; (1890) 13,426; (1900) 19,164; (1910) 25,531.



JAMES MADISON.

MADISON, JAMES: 1751, Mar. 16—1836, June 28; b. Port Conway, Va.: fourth president of the United States. The oldest of 12 children in an old Va. family, he received a thorough education, from private tutors, preparatory to entering Princeton College, where, 1772, he graduated, but remained another year for the study of Hebrew. Returning home he studied theology, history, and law, while teaching his younger brothers and sisters. His talents were unusual, and his industry very great. In the knowledge of history and constitutional law he was without a peer among the statesmen of his time; while his theological attainments were scarcely less eminent. His learning was equalled by his precociously sober and profound judgment, keen perception, and sterling integrity. In 1774, at 23 years of age, he was made one of a committee of safety by the citizens of Orange co.; and 1776, he was elected a delegate to the state convention at Williamsburg, which urged an immediate declaration of independence, and appointed him on the special committee for framing a state constitution. On this committee he displayed all that liberality of spirit, wise foresight, and logical precision of thought and expression that later proved so useful to him and to the country. He was chosen a member of the first state assembly under the new constitution, and though defeated for a second term because he would not resort to the then prevalent methods, of the 'practical politician,' the assembly, 1778, elected him a member of the governor's council; and 1780, he was chosen a delegate to congress. There he showed his wisdom by approving the proposed surrender to Spain of our rights to the free navigation of the Mississippi, and by urging, against his constituents, the adoption of the impost law proposed by congress, which though at first refused was finally adopted by Va. In 1784, he was again elected to the state assembly, where he advocated every measure looking to the strengthening of the federal government. He supported the amendment giving congress the control over the foreign trade of the states; secured the passage of a port bill restricting the entry of foreign ships to certain specified ports; procured the abolition of all religious tests for civil office-holders in Va.; and steadfastly opposed the craze for issuing paper money. But perhaps his most important work at this time was in bringing about the appointment of commissioners from Va. to confer with commissioners from the other states with reference to the country's trade and the advisability of giving the regulation of the same to the federal government. Commissioners from Va., Del., Penn., N. J., and N. Y. met at Annapolis, 1786, Sep. 11. Hamilton prepared an address which was adopted, calling another convention at Philadelphia on the second Monday of May, 1787, and committing to it not only the regulation of commerce, but 'other important matters.' Sanctioned by congress, the convention met. M. was a delegate from Va., with Washington, Randolph, Mason,

and others. They presented to the convention the famous 'Virginia Plan,' of which M. was chief author, and which embodied the main principles of the federal constitution, which made a nation out of a loose confederacy of independent states. Moreover the adoption of this constitution by the slave states was brought about only by M.'s compromise of the 'three-fifths rule,' by which 5 slaves were made to count as equal to 3 individuals in the assessment of population for taxation or representation. By this was the formation of the federal union made possible. Next he engaged with Hamilton in writing *The Federalist*, the most profound and at the same time most practical work on political science ever produced in America. Of the 85 papers that came out under that title, 51 were by Hamilton, 29 by M., and 5 by Jay. M.'s share would probably have been larger had he not had to return to Va., 1788, March, to attend the state convention for ratifying the constitution, which ratification was accomplished mainly through his influence, against men like Patrick Henry, Mason, Monroe, Harrison, and Tyler. When the time came for choosing senators for the first U. S. senate, M. was defeated by the anti-federalists; but they could not prevent him from being elected to the house of representatives, of which he at once became a leader. He proposed raising a revenue by tonnage and tariff duties; establishing the executive departments of the treasury, of war, and of foreign affairs; he, too, offered the ten amendments to the constitution, which were made a part of it 1791, and which were meant to supply the place of a bill of rights. When the division into two political parties took place, after the adoption of the constitution, M. joined and soon became a leader of the Republican party, against Hamilton and the Federalist party, whose financial policy of establishing a national bank, and assumption of state debts by the national govt., he strenuously opposed. At the close of Washington's second administration, M. retired from public life for a time, having married, about two years before (1794, Sep.), the beautiful widow of John Todd of Philadelphia, who as 'Dolly Madison' is remembered as the most popular and tactful leader of society at our national capital. She was only 26 years old, and survived him 13 years, dying 1849. With her he retired to his newly built home at Montpelier, Orange co., Va.; but only for a short time. After having drawn up the resolutions adopted by the Va. legislature protesting against the government's alien and sedition acts as being unconstitutional, M. was again elected to the state assembly 1799; and 1801 was made sec. of state by Jefferson, though his influence was less marked, and perhaps his ability also, during this period of his career than it was during the constructive years of our national history. In 1808, M. was elected president, receiving 122 out of the 175 electoral votes cast. Jefferson's embargo act had been repealed by this time, and one substituted declaring non-inter-

course with France and England. False representations by France caused this non-intercourse to be declared only against England. Hence began the war with England, which had been coming on for some time, and for which the American people seemed eager. Madison was nominated for a second term with the understanding that he should adopt a war policy. 1812, June 18, war was declared. In autumn, Madison was re-elected by 128 out of 217 electoral votes. His prosecution of the war, however, was feeble, and caused much dissatisfaction; for he was by natural disposition a man of peace; his convictions were against this particular war, as were those of many others; he had yielded to a factional demand for the war mainly for political reasons. 1814, Aug., the city of Washington was captured by the British and its public buildings ruthlessly burned; the president fled in one direction, Mrs. Madison in another. Four months later peace was declared; and two years afterward, at the expiration of his second term, 1817, Madison retired to his home at Montpelier, where he spent the remaining nearly 20 years of his life in tranquillity among his books and numerous friends. As a constructive statesman and a founder of our national government and life, he must ever be mentioned with Washington, Hamilton, and Jefferson; as an executive he was less capable and less popular than many others; as a scholar he was broad and profound to a remarkable degree; as a man he was gentle, kind, and dignified, beloved by all who knew him, and respected by all as one whose character was beyond the possibility of reproach even by his bitterest foes. His writings on various topics were bought in MS. by congress from Mrs. Madison for $30,000. The *Letters and Other Writings of James Madison* were published in Philadelphia in 4 vols. 1865. The best biographies are Wm. C. Rives's (Boston, 3 vols.); and S. H. Gay's in 'American Statesman' series (Boston, 1 vol.).

MAD'ISON, JAMES, D.D.: 1749, Aug. 27—1812, Mar. 5; b. near Port Republic, Va.: Prot. Episc. bp. of Va. He graduated at William and Mary College 1772; was admitted to the bar, but abandoned law for theology; chosen professor of natural philosophy and mathematics in William and Mary College 1773, and president 1777; was ordained in London, England, 1775; president of the first convention of the Prot. Episc. Church in Virginia 1785; elected first bishop of Virginia, and consecrated in Lambeth Palace 1790; and was active as college president and bishop till his death. He received his degree from the Univ. of Penn. 1785, and William and Mary College 1796.

MADISON, LUCY FOSTER: American novelist: b. Kirksville, Mo., 1865, Apr. 8. She was educated at the high school in Louisiana, Mo., and was married in 1890 to W. S. Madison. She has published *A Maid of the First Century* (1899); *A Maid at King Alfred's Court*

(1900); *A Colonial Maid* (1902); *A Daughter of the Union* (1903); *In Doublet and Hose* (1904); *A Maid of Salem Towne* (1906); etc.

MAD'ISONVILLE: Ky., city, county-seat of Hopkins county; on the Louisville & N. railroad; about 125 m. s.w. of Louisville. It is in a rich agricultural region, tobacco being one of the principal productions. Coal and natural gas are in the near vicinity. The chief manufacturing establishments are a tobacco factory, tobacco stemmeries, lumber and planing mills, and flour mills. A coal mine nearby and the natural gas contribute to the prosperity of the city. Pop. 3,720.

MAD MUL'LAH: term applied to Mohammed Ali, the Mahdi, or Moslem Messiah: b. Somaliland, 1843; d. 1884. In his youth Mohammed was initiated into the mysteries of the occult sciences and sorcery among the tribe of the Danakil. A study of the Koran and the Arab writings followed in the Marabout school. When quite young the future Mullah made the pilgrimage to Mecca, and subsequently made the sacred visit three or four times. After his last pilgrimage Mohammed returned to Berbera, but met with small success in that commercial town, and established himself among a powerful inland tribe. Here he made his position secure by his appearance of holiness. He assumed the title of Mullah (priest and heaven-sent), and even that of Mahdi (prophet). Overwhelmed with presents by his credulous followers, he was soon among the richest and most influential of the land.

Not content with persuasion, the Mullah, following the example set by Mohammed the Great, threatened with death all those who disbelieved, and in following up these threats caused the disturbances which brought about the Somaliland campaign. In 1881, he destroyed the Egyptian army despatched against him. He died of smallpox.

MADOC, *măd'ok:* son of Owen Gwynnedd, a Welsh prince: 12th c.; believed by many of his countrymen to have discovered America about 300 years before Columbus. Compelled, it is said, by civil strife to abandon his native land, he sailed westward 1170 with a small fleet, and after a voyage of several weeks, reached a country whose productions and inhabitants were quite unlike those of Europe. Here he lived a long time; then returning to Wales, he gave an account of the new land that he had discovered, equipped another fleet, set sail again, and was never more heard of. The story of Madoc is in the *Historie of Cambria, now called Wales, a part of the famous Yland of Brytaine, written in the Brytish Language above 200 years past by Caradoc; translated into English by H. Lloyd, gent.; corrected, augmented, and continued by David Powell* (1584).

MADONNA, or MADONA, n. *mă-dŏn'nă* [It. *madonna*, my lady—from *mia*, my; *donna*, lady: L. *mĕă domĭna*, my lady]: term equivalent to *madam*, but applied particularly to the Virgin Mary, and to the pictures represent-

DOLLY MADISON.

ing her. The earliest Christian art did not attempt any representation of the mother of Christ; such representations appeared first after the 5th c., when the Virgin was declared to be the 'Mother of God.' The face of the mother is generally full, oval, and of a mild expression; a veil adorns the hair. At first the lineaments of the Virgin's countenance were copied from the older pictures of Christ, according to the tradition which declared that the Savior resembled his mother. A chronological arrangement of the pictures of the Virgin would exhibit in a remarkable manner the development of the Rom. Cath. doctrine on this subject. The M. has been a principal subject of the pencils of the great masters. The grandest success has been achieved by Raphael, in whose pictures of the M. there prevails now the loving mother, now the ideal of feminine beauty, until in that of St Sixtus he reaches the most glorious representation of the 'Queen of Heaven.' Among symbolic representations may be mentioned Mary with the white mantle, i.e., the mantle of love under which she receives the faithful; and the Virgin with the half-moon or with the globe under her feet, according to the meaning ascribed to Rev. xii. The Virgin was never represented without the Child until comparatively recent times.—For further information, see Mrs. Jameson's work, *Legends of the Madonna* (Lond. 1852).

MADOQUA, *măd'o-kwă* (*Antilope Saltiana*, or *Neotragus Saltianus*): species of antelope, abundant in Abyssinia; one of the smallest, if not the very smallest of horned animals, being scarcely the size of a hare. Its legs are long and slender; its tail very short; its horns short and conical, the males alone having horns; the general color is gray, the fore-parts reddish.

MADRAS, *ma-drăs':* one of the several local governments of British India, still commonly called the 'presidency of M.,' occupying the s. part of the Indian peninsula. It comprises 22 British districts, 3 agencies under special administration, and 5 native states; area, British districts, 141,726 sq. m.; pop. (1901) 38,209,436; native states, area, 8,453 sq. m.; pop. 3,764,182; total pop. of all M., 42,397,522. On the Malabar Coast, where more rain falls than on the e. side of the peninsula, the mean temperature is 78°; on the Coromandel coast the average is 84°, and the thermometer frequently indicates 110° in the shade. Rice, cotton, indigo, coffee, sugar, maize, millet are extensively cultivated, and the minerals are iron, manganese, copper, magnesia, antimony, lead, and silver. The chief manufactures are muslins, cotton, silks and carpets, saltpetre and salt.

MADRAS' (called by the natives *Chennapatanam*, 'the city of Chennappa,' an Indian prince): the third city of British India, cap. of the govt. of M.; on the Coromandel coast, the w. shore of the Bay of Bengal, lat. 13° 5′ n. No commercial centre of equal size and importance is so unfortunate in its site. The roadstead is open to every

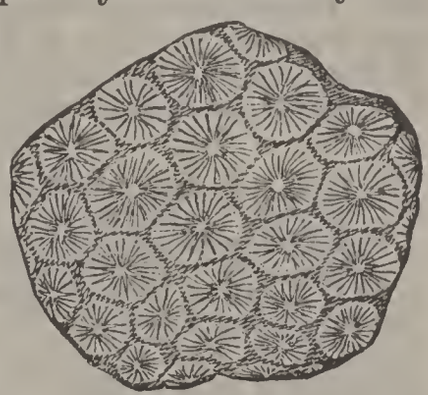
wind, except that from the w., and in a sudden gale, vessels are obliged to run for the open sea. The city is not on a navigable river; the soil of the vicinity is but moderately productive; and during the hot months, the thermometer, even in a well-appointed room, rises to 96°. In calm weather., the surf breaks 300 ft. from the shore, and its wave is 3 ft. in height; during a storm, it breaks 1,000 ft. from shore, with a wave 14 ft. high, and at such a time any attempt to land, even in the boats of the natives built for this purpose, is most dangerous. The seasons are distinctively marked by the monsoons, the n.e. from Oct. to Feb., and the s.w. from May to Oct. The force of the s.w. monsoon, however, is so much broken by the Ghats that its influence is hardly felt. During the hot months, the climate of M. is pleasantly modified by a sea-breeze, called by the residents 'the doctor,' which sets in at noon, and lasts till night. The city, with its suburbs, nine in number, extends along the coast for 9 m., and has an average breadth of 3½ m. On the coast, and midway between the n. and s. extremities of the city, is Fort St. George, strongly fortified, garrisoned usually by a regt. of European troops and two companies of artillery; also, three regiments of native infantry are usually stationed here. Within the fort are the council-house and a number of civil and military offices. The district of Black Town, n. from the fort, lies low, in some places only 6 inches above sea-level at spring-tides. It is defended, like the fort, from the encroachments of the sea by a strong stone bulwark. In Black Town are the Seven Wells, the water of which, filtered through a bed of fine sand, is singularly pure and wholesome. The principal buildings and institutions are Government House, a handsome edifice, though much inferior to the similar establishments in Calcutta and Bombay; the light-house, n. of the fort, 128 ft. above sea-level, and having a light, said to be one of the most brilliant in the world; the Scotch Presb. Church of St Andrew, founded 1818, a stately and beautiful edifice; the university, with European professors, and numerous teachers, European and native, and with a valuable museum and a library; St. George's Cathedral, giving a magnificent view of the city and its vicinity, and containing several monuments by Chantrey (including one of Bp. Heber), and some figures by Flaxman. There are also military male and female orphan asylums, a medical school, a branch of the Royal Asiatic Soc., the Madras Polytechnic Institution, the Govt. Observatory, a mint, the churches of numerous Christian denominations, and the Madras club, to which members of the Bengal and Bombay clubs are admitted as honorary members. Madras stucco, or *chunam*, is largely employed in decoration of public buildings. When laid upon walls, pillars, etc., dried and polished, it has the appearance of the finest Parian marble. The first British settlement on this coast was at Armagon, 60 m. n. of M.; but the seat of the present fort being granted by a native prince 1639, a

removal took place, and the nucleus of the present city was formed. M. is now the residence of the government of the presidency, including the gov., members of council, etc., and judges of the supreme court. The tables of Europeans in this city are supplied with beef, mutton, and many other home luxuries. The chief articles of export are rice, cotton, hides, skins, and especially coffee. The exports from the M. ports are valued at $20,000,000 to $25,000,000 a year; imports at more than $10,000,000. M. has telegraphic communication with England, and therefore America; and cables connecting it with Hong-Kong were laid 1871. M. has railway communication with Bombay, Calcutta, and consequently with the main system of Indian lines. Pop. (1881) 405,848, of whom 3,205 were Europeans, 12,659 Eurasians, 50,298 Mohammedans and the rest chiefly Hindus; (1901) 509,346.

MADRAS' SYS'TEM: see MUTUAL INSTRUCTION.

MADREPERL, *măd'rĕ-pėrl* [It. *madreperla*—from *madre*, mother; *perla*, pearl]: mother of pearl.

MADREPORE, n. *măd'rĕ-pōr* [F. *madrépore*—from *madré*, spotted, and *pore*, a pore: It. *madrepora:* comp. Gr. *pōrŏs*, a light friable stone], (*Madrepora*): genus of zoöphytes (*Anthozoa*), type of a family, *Madreporidæ*, in which the polyps have 12 short tentacles, and the polypidom is stony. The name, however, is often more extended in signification, and popularly is not clearly distinguished from CORAL. The polypidom is sometimes arborescent and branched, sometimes spread out in a leaf-like form. The cells in the true madrepores are isolated and lamellated, spread over the surface of the polypidom like little stars. The variety of forms among the madrepores is very great, and many are very beautiful. They all are found in the seas of warm parts of the world. The *Astræas* are generally in large convex masses, the surface hollowed with crowded stars. They increase with great rapidity, as do some of the other madrepores, and are often found in huge masses, composing some of the most recently formed rocks. MADREPORITE, n. *măd'rĕ-pōr'īt*, fossil madrepore; a variety of limestone having a small prismatic or columnar structure which looks like the pore arrangement of coral, but which is only a species of crystallization. MADREPORIFORM, a. *măd'rĕ-pōr'ĭ-fawrm* [L. *forma*, shape]: perforated with small holes like a coral. *Note.*—Skeat says the origin may be It. *madre*, mother; Gr. *pōrŏs*, a light friable stone, hence meaning 'mother-stone'; the connection with *pore* was early substituted for Gr. *pōrŏs*.



Madrepore (*Astræa ananas*).

MADRIALE, n. *măd-ri-â'lā* [It.]: a word derived from madrigal, and as, in the early operas, madrigals were performed between the acts, without necessarily having any connection with them, the word came to be applied to any species of intermezzo.

MADRIER, n. *măd'ri-ėr* [F. *madrier*—from L. *mate'riă*, stuff, material]: a thick board or plank used for supporting the earth in mines, and for other military purposes.

MADRID, *mă-drid'*, Sp. *mâ-thrēth':* capital city of Spain, in the province of M. in New Castile (see CASTILE): near the centre of the country, on the left bank of the Manzanares, a small stream whose waters join those of the Jarama, an affluent of the Tagus. It is built on a hilly, barren, and ill-watered plateau, 2,060 ft. above sea-level, on one hand, without protection against the bitter n. winds from the snowy peaks of the Guadarrama Mountains, and on the other, open to the *Solano*, the s.e. wind, which, aided by a glaring sun, often raises the temperature to 90° and even to 105° in the shade. In winter, the temperature sometimes falls to 18°. Summer, however, is the most trying period. During this season, the sunny and shady sides of the same street may differ 20° in temperature. The climate of M. has been proverbially described as *tres meses de invierno y nueve del infierno* (three months of winter and nine months of hell). The rate of mortality is 1 in 30 to 34. The city is circular in shape, and is surrounded by low walls pierced by 16 gates. It contains 32 churches, 14 barracks, 13 hospitals, 18 public libraries, 4 foundling hospitals, 13 royal academies, numerous elementary schools, a university, 7 leading and numerous minor theatres, an ample supply of newspapers, many literary and artistic institutions, above a dozen nunneries—44 monasteries were suppressed 1836. The number of palaces is great. The principal architectural feature is the Royal Palace (*Palacio Real*), a splendid edifice of granite and of a stone resembling white marble. It is a square 470 ft. in length on each side, 100 ft. in height, inclosing a court 240 ft. square. There are two libraries, the public and the private royal libraries: the former, containing 230,000 vols., is well kept and tended; the latter, with 100,000 vols., is rapidly falling to decay. The royal armory is one of the finest in the world; the Toledo blades, the artistic armor, and shields from Augsburg and Milan, are superb. The armory contains relics of the greatest Spanish epochs, and furnishes in itself a realization of Spanish military history. The *Museo*, said to be one of the finest picture-galleries in the world, contains besides specimens of many other famous painters, 10 of Claude, 22 of Van Dyck, 16 of Guido, 46 of Murillo, 21 of N. Poussin, 10 of Raphael, 62 of Rubens, 52 of Teniers, 43 of Titian, 27 of Tintoretto, 62 of Velasquez, 24 of Paul Veronese, and 10 of Wouvermans. Of all these pictures, the most wonderful are those by Velasquez, whose finest work is here, and who,

indeed, can here only be studied to advantage. The genral aspect of M. is that of a new city, with fine houses, streets, and squares. In the squares are numerous statues, as those of Philip IV. and of Cervantes. The manufactures of the city are unimportant. The artisans and tradesmen are supported by the court, the nobility, the officials, and the immmerable body of place-hunters.

The first historical mention of M. occurs under Ramiro II., King of Leon, who took this city 932. In 1083, when M., then called Majerit, was captured by Alfonso VI. of Castile, it was merely a Moorish fortified outpost of Toledo. It rose into some importance in the beginning of the 16th c., when Charles I. (afterward Emperor Charles V.) removed his court hither. In 1560, it was declared the only court by Philip II. A number of memorable treaties have been concluded in M., and bear its name, particularly that between Charles V. and Francis I. of France 1526; that between Spain and Venice 1617; and that between Portugal and Spain 1800. In the Spanish War of Succession, it favored the French party; and in the war of freedom against France, it gave the signal for a general rising by an insurrection against Murat 1808, May 2, in which 1,500 citizens of M. lost their lives. 1809 till 1812, it was held by the French; but in 1812, the Duke of Wellington entered it, and replaced it in the hands of its legitimate rulers. M., always opposed to the Carlists during the recent civil strife of Spain, adopted the cause of King Alfonso 1874. —The pop. has nearly doubled in abt. 25 years: (1877) 397,690; (1900) 539,835. The area of the city was 11½ sq. m.—The *province* of M. (1900) 3,084 sq. m.; pop. (1887) 682,644; (1900) 775,034.

MADRIGAL, n. *măd'rĭ-găl* [F. *madrigal*—from It. *madrigale;* Sp. *mandrial*, a kind of irregular lyric poem, properly a pastoral—supposed from L. *mandra;* It. *mandra*, a fold, a stable]: short lyrical poem, adapted to the quaint and terse expression of some pleasant thought, generally on the subject of love. The proper M. consists of three verses or strophes, generally bound together by rhymes; but this form is not always adhered to, and the name is sometimes applied to little love-poems of any form. Among the Italians, the best writers of madrigals are Petrarch and Tasso; among the French, Montreuil, Lainez, and Monerif; among the Germans, Ziegler (the earliest), Voss, Manso, Goethe, and A. W. Schlegel; and among the English, the poets of the Elizabethan and Caroline ages, several of whom, such as Lodge, Withers, Carew, and Suckling, have written verses, sometimes called madrigals, sometimes songs, the grace and elegance of which have never been matched.—The name M. is applied also to pieces of vocal music of a corresponding character. The musical M., which originally was a simple song in a rich artistic style, but afterward with an instrumental accompaniment (generally the organ), is believed to have originated with the Flemings, and dates from the middle of

the 16th c. It went out of fashion about the beginning of the 18th c., but the later *glee* may be regarded as a similar composition. The English madrigalists are especially famous. Neither Italy nor the Netherlands has produced greater names than the English Morley, Wilbye, Bennet, Ward, Orlando Gibbons, Dowland, and Ford. MAD'RIGALIST, n. writer of madrigals.

MADURA, *mâ-dô'râ* (Sanskrit, *sweet*): island, separated by a narrow strait from the n.e. of Java, in 6° 52′—7° 17′ s. lat., and 112° 39′—113° 9′ e. long.; about 90 m. long and 24 broad. It consisted of three kingdoms—Madura, w.; Pamakasan, middle; and Sumanap, e.; but is now a Dutch possession, being administered by the native princes under Dutch residents. Chief town, Bangkalang. It is closely connected with Java (q.v.). Pop. about 1,660,000.

The natives, of Malay stock, are active, honest, brave, and industrious, but quick-tempered and revengeful. They are mostly Mohammedan. They quarry stone, burn lime, make saquerus palm sugar, vegetable oils, mats, and baskets, weave coarse fabrics, make salt, carve wood, fish, and cultivate rice, maize, tobacco, indigo, etc. The rivers are small, and the hills attain no great height; Padjūdan, the highest, being 1,364 ft. above the sea. In some districts, petroleum springs out of the ground, and is burned in lamps. A low chain of limestone hills crosses the island. Exports are sugar, tobacco, indigo, cocoa-nut oil, edible nests, stone, trepang, buffaloes, horses, many cattle, and much salt.

MADU'RA: maritime district in the s. of British India, presidency of Madras; bounded e. by the strait which separates Hindustan from the island of Ceylon; 9,502 sq.m., and a population of about 2,170,000. Eastward from the shore runs a narrow ridge of sand and rocks, mostly dry, which almost connects Ceylon with the continent. Cotton is the chief commercial crop; and sugar-cane, betel-nut, and tobacco are grown. The principal town is Madura. Missions of the Amer. Board were established in Madura 1834, and have gained many converts. Rom. Cath. missions have been successful also.

MADU'RA: chief town and headquarters of the British Indian dist. of Madura, on the s. bank of the Vaigai river. Its great temple measures 847 ft. by 744 ft.; in it is the Hall of the Thousand Pillars. The famous palace of Tirumala Náyak is the finest relic of secular architecture in Madras. A mile and a half e. of the town is the great tank 3,600 ft. square, round which the idols from the pagoda are drawn on a raft at an annual festival, illuminated as reported by 100,000 lamps. Pop. 105,500.

MÆANDER, *mē-ăn'dĕr* (now *Menděrë*): ancient name of a river of Asia Minor, rising near Celænæ, in Phrygia, and flowing s.w. into the Icarian Sea at Miletus. It is noted for its numerous windings—whence the English

word *Meander* (q.v.) signifying to flow in a winding course. The Scam′ander (q.v.) also is now called *Mendĕre*.

MÆCENAS, *mē-sē′nas*, C. CILNIUS: Roman statesman, celebrated for his patronage of letters: b. early in the 1st c. B.C.; d. B.C. 8; of Etruscan origin, and of royal descent (Hor. *Carm.* i. 1), perhaps from Porsena. He received an excellent education, was familiar with Greek and Roman literature, and occasionally did a little in the way of authorship himself. His first appearance in public life dates after the assassination of Julius Cæsar (B.C. 44), when he figures as the friend and adviser of Octavian. He had, it is clear, a talent for private diplomacy, and was employed mainly in that capacity. He 'arranged' a marriage between Octavian and Scribonia, made up (temporarily) the differences between Octavian and Antony, and brought about the peace of Brundisium. B.C. 36, he was in Sicily, helping Octavian, as usual. Five years later, when the latter was fighting the great and decisive sea-battle of Actium with his rival Antony and the Egyptian princess Cleopatra, M. proved himself a vigilant gov. of Rome, by crushing a conspiracy of the younger Lepidus, and thereby preventing a second civil war. When Octavian became emperor under the title Augustus (a step which he is said to have taken by the advice of M., who was profoundly impressed with the necessity of a 'strong government' to repress the anarchic elements of the period), M. was appointed administrator of all Italy. The nature and extent of his official power are not precisely understood, but they were undoubtedly great, though the influence and authority of M. are to be estimated rather from his intimacy with the emperor than his mere position as a public servant. This intimacy continued many years; but sometime before B.C. 16, it was ruptured from causes not now known. No enmity, however, ensued. M. was a thoroughly sincere imperialist. He had a belief in the value of an established government; and when he found that he no longer retained the confidence of his sovereign, he did not lapse into a conspirator; but, as a modern minister might do, retired into the obscurity of private life. Literature and the society of literary men thereafter occupied his time. He was immensely rich, and kept an open table for men of talent at his fine house on the Esquiline Hill. M.'s intercourse with Horace especially was most cordial, and equally honorable to both. So far as personal morality went, M. was a thorough pagan—not a bad man as the word was then understood, but copiously addicted to sensual delights. His adulteries—if not worse—were the talk of the city; he dressed effeminately, had a passion for theatrical entertainments, paid great attention to cookery, gardening, etc.; and in short, in his theory of life, was an Epicurean of 'the baser sort.' It does not, therefore, surprise us to find that he was a valetudinarian and a hypochondriac, and that he died childless. He left the bulk of his property to Augustus.

MAELAR, *mā'lėr* (or MÄLAREN, *mā'lėr-ėn*), LAKE: one of the largest and most beautiful lakes in Sweden, and one of the most beautiful in the world; 78 m. in length, in average breadth about 13; consisting of numerous small lakes communicating by short channels, and inclosing islands to the number of 1,200. In but few places is there a clear sheet of water more than a mile square. It has many n. and s. inlets, one of which extends 25 m. northward. It is navigable in all parts by boats; and steamers ply to and from Stockholm. Its e. end is close by Stockholm, where its waters are poured into the Baltic Sea through a canal 2 m. long, the difference of level being scarcely six ft. The banks are varied with wood, lawn, and cliffs, and adorned with many castles, country-seats, and villas. They are very fertile and well cultivated, and upon them are, besides Stockholm, the towns of Enköping, Westeras, Köping, Arboga, Strengnäs, Thorshälla, Mariefried, and Sigtuna.

MAELSTROM, n. *māl'strōm* [Norw. a whirling stream]: the name of a celebrated whirlpool on the coast of Norway; a violent storm of temper. See MALSTRÖM.

MÆNAD, n. *mē'năd* [Gr.—from *mainomai*, to be mad]: a woman who took part in the orgies of Bacchus; hence, a raving, frenzied woman.

MAESHOWE, *māns-how':* artificial mound with an interior chamber, of unknown antiquity; on the mainland of Orkney, about nine m. w. from Kirkwall, and little more than a mile from the famed Standing Stones of Stennis. M. is described by Dr. William Chambers in a work (*My Holidays*) privately circulated 1867, from which some particulars are here drawn. Outwardly, it presents only a circular grassy tumulus, or barrow, 36 ft. high, and about 92 ft. in diameter at the base, at which is a low door. Within is a low passage varying from a width of 2 ft. 4 inches at the entrance, to 3 ft. 4 inches at the opening into the interior chamber, and with a height not exceeding 4 ft. 8 inches. The passage is formed by slabs of stone, above, below, and along the sides. The central chamber, a vault of slabs of stone, is about 15 ft. square, and 13 ft. high. On each of the sides except that with the entrance, 3 ft. above the floor, there is a square opening to a cell, the largest of which is 7 ft. long by 4 ft. 6 inches wide. The roof of the vault, somewhat changed by recent repairs, had originally been constructed with slabs advancing successively layer above layer to the centre. There are Runic inscriptions and emblematic or fanciful figures carved on a few of the stones. The carvings, as explained partly through the assistance of Norwegian scholars, refer to Vikings and other Scandinavian heroes, or to transactions in the middle ages. One of these inscriptions, according to one interpreter, signifies: 'Molf Kolbainson carved these Runes to Ghaut'—Ghaut being possibly a comrade who fell in battle. Another interpretation is: 'Tholfe Kolbainsson cut these Runes (on) this cave.' Scarcely two

persons agree in the signification of any of the inscriptions; this may have been due to imperfect transcriptions sent to foreign scholars. Damp is likely soon to

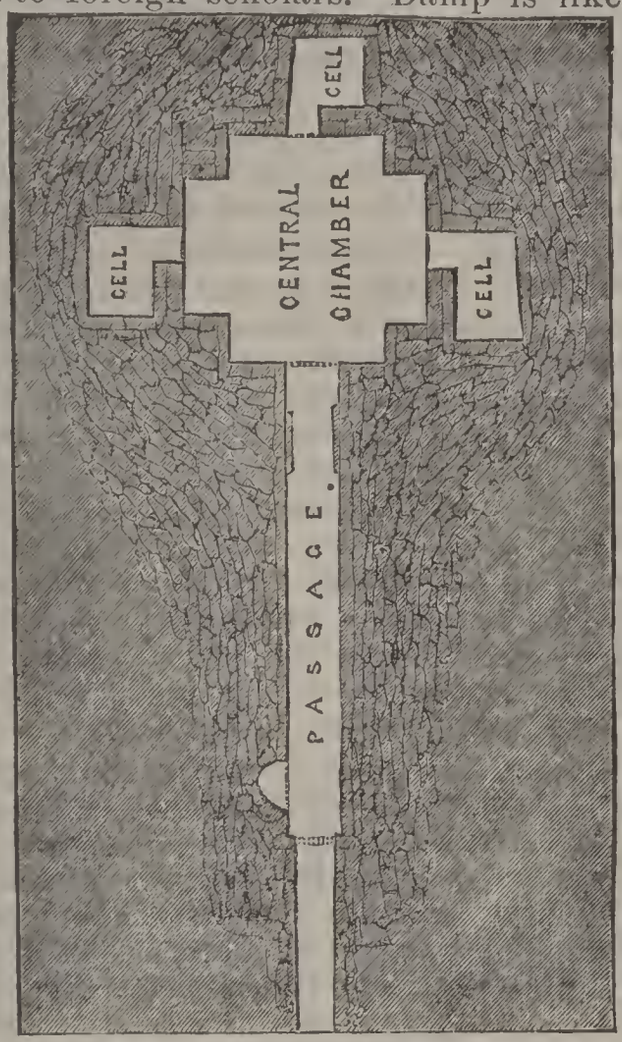


Fig. 1.—Maeshowe: Ground-plan.

deface these interesting inscriptions. Several purport to refer to hidden treasure, which as an advertisement of a secret, has its absurd side. Of the emblematic or fanciful figures, nothing can be made: these may be mere whimsicalities. Nothing in the Runes explains the origin or use of the structure. We are left to conjecture that it was erected as a sepulchre in extremely remote times; and being opened by Scandinavian rovers, in the hope of discovering hidden treasure, they used it as a resort or hiding-place, and carved the inscriptions which remain.

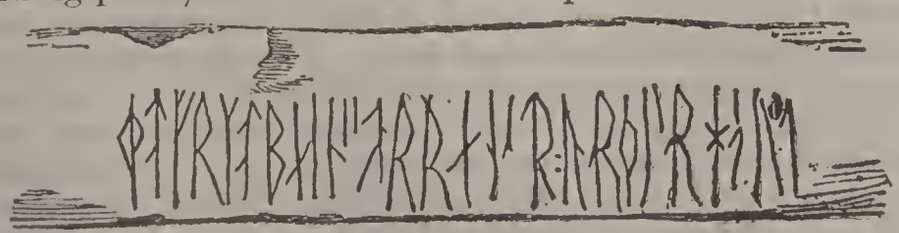


Fig. 2.—Runes, interior of Maeshowe.

Obviously, the building and the passage communicating with it were erected on the open plain, and then covered with the earth which forms the tumulus. There is at some distance an enviro[illegible]ound and ditch, still nearly entire. The whole structure bears a resemblance to the

vaulted tumuli in other parts of the British Islands: this points to a common origin. Capt. Burton's *Ultima Thule* (1875) asserts a resemblance or connection between the runes of Maeshowe and a Syrian cipher called El Mushajjar.—Stuart in the *Transactions* of the Scottish Soc. of Antiquaries, 1867.

MAESTOSO, n. *mâ'ĕs-tō'zō,* or MAESTOSA [It.]: a direction in music, to give grandeur and strength to a passage: it is frequently followed by *con gravita.*

MAES'TRICHT. See MAASTRICHT.

MAESTRICHT BEDS, *mâs'trĭkt:* geological strata of soft yellowish limestone, at Maastricht in Holland. They have a thickness of 100 ft., abounding in remains of Corals and Bryozoa, sometimes, indeed, entirely composed of them. The fossils are peculiar, and quite distinct from Tertiary species. Yet a considerable interval must have elapsed between the deposition of the Maestricht and Bryozoa and the underlying chalk, for that had been abraded before the deposition of the newer beds. The most remarkable fossil in these strata is the gigantic marine reptile Mososaurus (q.v.).

MAESTRO, n. *mâ-ĕs'trō* [It.]: a master in any art; especially a master in music; a composer.

MAETERLINCK, *mĕt'ėr-lĭnk,* MAURICE (Gallicized from the original MOORIS MÄTERLINCK): Belgian author: b. Ghent, 1862, Aug. 29. He was educated in a Jesuit school in Belgium, then studied law, was admitted to the bar in 1887, but was from the first more interested in letters, and in 1896 settled in Paris as an author. His work may be divided into three parts—his lyric verse, his dramas, and his philosophical essays. Of the first the two volumes *Serres Chaudes* (1889) and *Douze Chansons* (1896) are representative. Maeterlinck's verse is imaginative, but lacks in any strong degree the melodic quality. His dramas are: *La Princesse Maleine* (1889); *Les Aveugles* (1890); *L'Intruse* (1890); *Les Sept Princesses* (1891); *Pélleas et Mélisande* (1892); *Alladine et Palamides* (1894); *La Mort de Tintagiles* (1894); *Aglavaine et Sélysette* (1896); and *Monna Vanna* (1902). Several of these were translated into English by Richard Hovey (q.v.), and *Monna Vanna* was rendered by Alexis I. du P. Coleman. The dramas are Maeterlinck's most striking work. Their eery symbolism can hardly be explained, but must be appreciated at first hand. Though they inaugurated a new theatric school—the *Drame Intime*—they are properly reading plays, and lose their mystery and impressiveness in presentation. *Pélleas et Mélisande* was given in the United States by Mrs. Patrick Campbell. To many the essays are the most interesting things that Maeterlinck has done. The volumes are *Le Trésor des Humbles* (1896); *La Sagesse et la Destinée* (1898); and *La Vie des Abeilles* (1902). The first is somewhat mystical, all are somewhat diffuse; but he has been called

by virtue of them a true successor of Swedenborg and Böhme.

MAFEKING, *mâ-fā-kĭng'*, or *măf'ĕ-king:* Cape Colony, a former Bechuana settlement, now a town, the administrative seat of the Bechuanaland protectorate, close to the borders of the Transvaal, 870 miles by rail northeast of Cape Town and about 200 miles west-southwest of Pretoria. The town stands near the upper Malopo river, and contains several substantial buildings, including a Masonic temple, a town-hall and a hospital, and there is a good water-supply, a swimming-bath, and a race-course. Mafeking sustained a protracted siege during the South African war of 1899-1901. It was isolated in October of the former year, and was brilliantly defended by a small force under Colonel (now General) Baden-Powell, until relieved by Colonel Mahon in 1901, May.

MAFFEI, *mâf-fā'ē*, Francesco Scipione, Marchese di: 1675, June 1—1755, Feb. 11; b. Verona: Italian author. He studied in the Jesuit College at Parma, and in his youth was in military service under his brother Alessandro di Maffei, who greatly distinguished himself in the Spanish War of Succession and who finally rose to the rank of field-marshal. Afterward Maffei turned to literary pursuits, and was one of the editors of a critical journal, intended to promote among the Italians an acquaintance with foreign literature. His tragedy *Merope* (Modena 1713) was received with great approbation, and went through 70 editions in Maffei's life. His successful comedy *La Ceremonia* soon followed. Maffei was a zealous promoter of the study of the Greek language and literature in Italy, and bestowed much labor on the examination of ancient manuscripts. His *Verona Illustratra* (Ver. 1731-2; new ed., 8 vols., Ver. 1792-3) is a work of much learning and value. He died at Verona. A collective edition of his works (21 vols.) was published Venice 1790.

MAFFLE, v. *măf'l* [Dut. *maffelen*, to stammer: Bav. *muffeln*, to mumble, to chew]: in *old* and *prov. Eng.*, to speak imperfectly, as a young child; to stammer. Maffling, imp. *măf'lĭng*. Maffled, pp. *măf'ld*.

MAFIA, *mâ-fē'â:* a Sicilian secret society similar to the Camorra, which has long existed in Naples, but much more powerful. The Mafia is essentially a form of organized lawlessness, but its organization is sufficiently elastic to baffle all the attempts of the government to suppress it. It is generally said to have had its origin in the *compagni d'armi*, a kind of police organized in Sicily early in the 19th century and dissolved by Garibaldi in 1860. Its members, who are required to prove their daring in a knife duel, are bound never to carry their suits to the regular courts or to give evidence before them. Murder and robbery are discountenanced under ordinary circumstances, but they are resorted to without hesitation

in the case of informers or specially obnoxious persons. Blackmail is levied from land-owners, who are required to employ only *mafiosi* in certain occupations. Criminals are protected and elections controlled by this infamous society, whose authority is greater than that of the law among the lower classes in Sicily. The Chinese highbinder societies are similar to the Mafia. Within recent years these murderous organizations have secured a footing in the United States, and murders directly chargeable to the Mafia have been committed in New York, New Orleans, Chicago, and other large cities.

MAFRA, *mâ'frâ:* small town of Portugal, province of Estremadura, 18 m. n.w. of Lisbon. Pop. 3,500. It is remarkable only for its palace and convent, which form an enormously large and most striking edifice, 780 ft. in length, 690 ft. in width, containing 866 rooms, with 5,200 windows, and about as many doors; 10,000 troops, it has been said, could be reviewed on its roof. It was built by King John V. (1717-81), and is splendidly fitted up and decorated. The library contains 30,000 vols., and is 300 ft. in length; its pavement consists of white and red marble; and the bookcases are of the most costly woods.

MAGADOXO, *măg-a-dŏks'ō,* Pg. *mâ-gâ-dō'shō,* or MUKDISHA, *măk-dē'shâ:* commercial town on the e. coast of Africa, on the Somali coast, lat. 2° 2′ n. It was built by the Arabs 924, for purposes of trade, and was flourishing when the Portuguese first visited it. It now belongs to the Imaum of Muscat, whose flag floats above the town. It exports dhurra, beans, peas, cattle, cotton, spices, etc. Pop., inclusive of slaves, about 5,000.

MAGALHA'ES, FERNAO DE. See MAGELLAN, FERDINAND.

MAGAZINE, n. *măg'ă-zēn* [F. *magasin;* Sp. *magacen;* Port. *armazen,* a magazine, a storehouse—from Ar. *makhzen,* a storehouse: Alb. *magazoid,* I bring together]: building in which to store provisions, arms, or ammunition; a strong building in which to store gunpowder safely; in a *ship of war,* a closely guarded room in the hold. In *literature,* a pamphlet published at regular intervals containing miscellaneous compositions: the earliest periodical of this class was the *Gentleman's Magazine,* begun by Edward Cave 1731.

MAGAZINE', in Military Affairs: a place for storage of gunpowder, though arms also may at times be kept in it. A magazine may be a dépôt where vast quantities of gunpowder are held in reserve, an entrepôt for the supply of several advanced works, a battery magazine for the wants of a fortress during a siege, or merely an expense magazine for the daily requirements of its special battery. The last is usually temporary, and hollowed out in the back of the rampart; but the other forms require most careful structure. They must be bomb-proof, which necessitates very thick walls; they must be quite free

from damp; and they should admit sufficient daylight to render the use of lanterns within generally unnecessary. Magazines are commonly built of brick, the solid masonry being arched over within, and a thickness of earth usually added above the brickwork, to insure impermeability to shells. The entrance is protected by shot-proof traverses, lest an opening should be forced by ricochet shots. Within, a magazine is divided into bins or compartments.

In a ship, the magazine is strongly built in the hold; it is divided by a transparent screen from the *light-room*, in which are kept properly provided lanterns, the introduction of fire in any form into the magazine itself being absolutely forbidden. As the explosion of the magazine is equivalent to the destruction of the ship, means are devised by which, on the least appearance of fire in its vicinity, the magazine may be immediately flooded.

MAGAZINE' GUNS. See GUNS.

MAGDALA, *măg-dâ'la:* rock-fort and small town of Abyssinia, about 120 m. s.e. of Gondar, on a plateau about 9,000 ft. above sea-level, and 1,000 ft. above the plain around. Magdala acquired note as the place of residence of the Negus or king of Abyssinia (see THEODORE), and as the place of captivity of the British prisoners, for whose rescue an expedition was at last sent out, 1867, by the British government. Its rock-fortress was forced 1868, Apr. 13; the town was burned and its defenses destroyed. Magdala was found to be a dirty and insignificant town. Pop. 3,000 or 4,000.

MAG'DALA (*Magadan*): town probably on the w. shore of the Lake of Galilee—*Migdal-el* of Josh. xix. 38; birthplace of Mary Magdalene, i.e., Mary of Magdala. After Jerusalem was destroyed Magdala became a seat of Jewish learning. The village of *el-Mejdel* now occupies its supposed site.

MAGDALA-RED, n. *măg'da-la-:* naphthaline-red. A beautiful red dye discovered in 1867 by Von Schiendl, at Vienna.

MAGDALEN, n. *măg'dă-lĕn:* a reformed prostitute—so called—pursuant to an utter misconception—after Mary *Magdalene* (q.v.) of Scripture.

MAGDALENA, *mâg-dâ-lā'nâ:* principal river of the United States of Colombia, S. America, flowing from a mountain lake at the s. extremity of the Eastern Cordilleras. After a n. course of 900 m., it falls into the Caribbean Sea, lat. 11° n., long. 75° w. Its upper course is rapid and interrupted by many cataracts; the lower is through a great plain. It is navigable to Honda, 540 m. from its mouth: its chief affluent is the Cauca. The area drained by the Magdalena is estimated at 110,000 sq.m.

MAGDALENA, *mâg-dâ-lā'nâ:* extreme n. state in the United States of Colombia; bounded n. by the Caribbean Sea, e. by Venezuela, s. by the state of Santander, w. by the state of Bolivar; 26,950 sq.m.; cap. Santa Marta. It

has two mountain ranges, a branch of the E. Cordilleras on the e., the Sierra Nevada de Santa Marta in the centre; is watered chiefly by the Rio Magdalena; has a fertile soil, producing rice, cotton, coffee, sugar, tobacco, cacao, and a large variety of tropical fruits. It has numerous seaports. The climate is intensely hot, and yellow fever prevails along the coast nearly the whole year. Pop. about 130,000.

MAG'DALEN COLLEGE: Oxford; in full, The College of St. Mary Magdalene; one of the colleges of Oxford Univ., England. William Patten, commonly called Waynflete from the place of his birth, successively head master of Winchester, head master and provost of Eton College, bp. of Winchester, and at the same time lord high chancellor, founded the Hall of St. Mary Magdalene 1448. In 1457, he obtained a license from the king to found a college into which he transferred the president and scholars of the Hall. Magdalen is in many respects the most remarkable college in Oxford, and Wood declared it 'the most noble and rich structure in the learned world, that is to say, that if you have regard to its endowment, it excelleth, all things considered, any society in Europe.' There were on the original foundation a president, 40 fellows, 30 scholars called demies, 4 chaplains, and 16 choristers. The fellowships and demyships were confined to certain specified dioceses and counties. By ordinances passed under the powers of 17 and 18 Vict. c. 81, the constitution has been considerably changed. Certain statutable restrictions on fellowships and demyships are abolished. The demyships are of the value of £95 per annum, and 10 are to be added to the statutable number: 20 exhibitions of the same value were at the same time founded. Five professorships—of moral philosophy, chemistry, mineralogy, physical geography, and pure mathematics—of the value of £600 per annum, take the place of three lectureships—of divinity, moral philosophy, and natural philosophy, which were founded by Waynflete. To carry out these changes, ten of the fellowships were suspended. By the same ordinance, it is directed that the fellowships are not to exceed £300 per annum, exclusive of rooms. This college is one of great beauty, and is rich in historical associations. It has 41 benefices in its gift.

MAGDALENE, *măg-dā-lē'nē* or *măg'dā-lēn*, MARY; or MARY OF MAG'DALA (named from the town Magdala; q.v.): a woman 'out of whom Jesus cast seven devils,' and who believed in him and followed him. She was one of the women who stood by his cross, and one of those who went with sweet spices to his sepulchre. To her first he appeared after his resurrection. In consequence of an utterly unfounded notion identifying her with the penitent woman (Luke vii. 36-50) who anointed the Lord's feet with ointment, and wiped them with the hairs of her head, Mary Magdalene has been long and gen-

erally regarded as a woman whose early life had been profligate, though of this there is no hint whatever in the narratives of the evangelists. The Magdalenes, frequent among works of art, represent her according to this prevalent misconception.—The very name Magdalene has come to be applied to women who have fallen from chastity, and institutions for the reception of repentant prostitutes are known as *Magdalen Asylums* (see PENITENTIARIES).—There is no evidence identifying Mary Magdalene with Mary of Bethany, sister of Lazarus.

MAGDALENE COLLEGE, Cambridge: one of the colleges in Cambridge Univ., England; founded 1519 by Thomas, Baron Audley of Walden, who left for this purpose the impropriate parsonage of St. Catherine Cree Church, London, also a considerable part of the city, anciently called Covent Garden, Christ Church. It has seven open fellowships on the foundation; four are named after persons who have made benefactions to the college—Spendluffe, Wray, Drury, and Millington. Magdalene College has 12 scholarships—3 of £60, 3 of £40, and 6 of £20 each—all of which are likewise named after their founders; besides several exhibitions for scholars from Shrewsbury School, for scholars from Wisbeach School, and for scholars from Leeds, Halifax, and Haversham Schools. There is also an annual benefaction, called the Pepysian, worth £50, in the gift of the master.

MAGDALEN ISLANDS: small group near the centre of the Gulf of St. Lawrence, 54 m. n.w. of Cape Breton Island, and about the same distance from Prince Edward's Island. They consist chiefly of Coffin, Amherst, and Grindstone Islands, whose inhabitants are supported by the productive cod, herring, and seal fisheries of neighboring waters. Pop. about 2,000.

MAGDEBURG, *măg'dĕh-bĕrg*, Ger. *mâch'dĕh-bûrch:* chief town of Prussian Saxony, 52° 8′ n. lat., and 11° 40′ e. long.; one of the most strongly fortified and most important commercial towns of Prussia, and the focus of four principal lines of railway in Germany. Pop. (1900) 229,667 (including its suburbs and its citadel). It is on the left bank of the Elbe, surrounded by extensive suburbs, known as Neustadt and Sudenburg; but with the exception of one long and wide thoroughfare, the *Breite Weg* (Broadway), its streets mostly are narrow and crooked. Magdeburg is the seat of the governmental courts of appeal and administration, and of a superintendent-general of the Evangelical Lutheran Church. It has two gymnasia, a normal school, institutions for the deaf and dumb and blind; schools of arts, trades, practical mining, medicine and surgery, etc. Its most remarkable buildings are the cathedral, built 1208—1363; the town-hall, in front of which stands the memorial of Otho the Great, erected after his death 973, by the magistracy, in grateful remembrance of his

ravors to the city; the govt. house, the barracks, and the theatre. The industrial products of M. comprise silk, cotton, and woolen goods, gloves, ribbons, and leather, and it has manufactories of tobacco, chicory, lead, sugar, and vinegar, and extensive breweries and distilleries. The transit and commission trade is considerable; there are annual wool and other markets; and trade is facilitated by rail, and by steam and canal navigation. In 967, M. was raised by Pope John XIII. to the dignity of the see of the primate of Germany, having already acquired the rights of a free city under Charlemagne. During the middle ages, the archbishops and the magistracy were frequently at war; and M. early adopted the Reformed doctrines, and thus brought upon itself the combined wrath of the emperor and the archbishops. During the Thirty Years' War, M. suffered fearfully. In 1629, it was besieged by the imperialists for 28 weeks in vain; in 1632, after a fierce resistance, the city was taken by Tilly, sacked, and nearly burned to the ground; the cathedral and about 150 houses being all that remained after the three days' ravage: 30,000 of the inhabitants were slain, and numbers threw themselves into the Elbe, to escape the fury of the invaders. In 1648, the archbishopric was converted into a secular duchy, and conferred on the House of Brandenburg, in compensation for the loss of Pomerania. In 1806, M. was taken by the French, and annexed by them to the kingdom of Westphalia; but finally restored to Prussia, in consequence of the downfall of Napoleon 1814.

MAG'DEBURG CENTURIES: name given to the first comprehensive work of Prot. divines on the history of the Christian Church. It was so called because divided into centuries, each of which occupied a volume, and because it began to be executed at Magdeburg (q.v.). The originator of the work was Matthias Flacius (1552), and his purpose was to demonstrate the identity of the Prot. doctrines with those held by the primitive church, and the departures of the Rom. Cath. Church from the same. Joh. Wigand, Matt. Judex, Basilius Faber, Andr. Corvinus, and Thom. Holzhuter were Flacius's principal fellow-laborers; and several Prot. princes and noblemen defrayed the heavy expense of the work. The writers, called *Centuriators*, brought their work only to the year 1300. It was published at Basel (13 vols., 1559–74); Baumgarten and Semler began a new ed. (6 vols. Nürnberg, 1757–65). The M. C. evinces great learning, accuracy, and sound judgment. The Rom. Cath. historian Baronius (q.v.) wrote *Annales Ecclesiastici* as a reply to it.

MAGDEBURG HEMISPHERES, n. plu. *măg'dĕh-bĕrg hĕm'ĭ-sfērz:* apparatus for illustrating atmospheric pressure, consisting of two hollow hemispheres, generally of copper or brass, with edges accurately fitted to each other and one of them furnished with a stop-cock. When the edges are rubbed over with grease, pressed tightly together, and the globe thus formed exhausted

of air through the cock, the hemispheres, which fell asunder before exhaustion, are now pressed together with immense force; e.g., if they are 12 inches in diameter, they will, after exhaustion, be pressed together with a force of nearly a ton. This experiment was performed first by Otto von Guericke (q.v.) 1650, at the imperial diet at Ratisbon, to the astonishment of Emperor Ferdinand III. and his princes and nobles.

MAGE, n. *māj:* in *OE.*, contraction for *magician.*

MAGELLAN, *ma-jĕl′an*, Sp. *mâ-ċhĕl-yân′*, FERDINAND; (properly FERNÃO DE MAGALHÃES): famous voyager: abt. 1470–1521, Apr. 27; b. Oporto (or perhaps Villa de Sabroza); of good family. He served with distinction under Albuquerque in the E. Indies; but thinking his services ill rewarded by the Portuguese court, he went, 1517, to Spain with his countryman, Ruy Falero, geographer and astronomer. They laid before Charles V. a scheme for reaching the Moluccas by the west, which was well received by him; and M. sailed 1519, Aug. 10, with five ships and 236 men, from San Lucar, and proceeding to the mouth of the La Plata, and along the shores of Patagonia, he discovered and sailed through the strait which bears his name (1520, Nov. 28); discovered the s. Pacific Ocean, to which he gave that name on account of the fine weather which he experienced there; reached the Philippine Isles, and fell in a fight with the chief of the isle of Matan. His ship was safely navigated home to Spain, and thus completed, 1522, Sep. 6, the first voyage ever made round the world. Patagonia, and the supposed continent of which the island Tierra del Fuego was long deemed a portion, were long known as Magellan's Land. The complete narrative of M.'s voyage was edited by Amoretti. See also *The First Voyage round the World, by Magellan*, by Lord Stanley (1875).—A member of the same family, Fray GABRIEL DE (1609–77), was an active Jesuit missionary in China, whose *Nouvelle Relation de la Chine* has been esteemed by scholars.

MAGEL′LAN (or MAGALHÃ′ES or MAGALHA′ENS), STRAIT OF: water-passage separating S. America from Tierra del Fuego, on the south. It is 300 m. in length; its breadth varies through the most of its course from 1 m. to 15 m. It was discovered 1520 by Magellan, and took its name from him. Its frequent fogs and windstorms, and many rocks make it perilous for sail-vessels, and it was long avoided by navigators generally. Within recent years, the introduction of steamships has caused it to be preferred as equally safe with the passage round Cape Horn, and much shorter, especially as careful observations have now made known the preferable channels among the numerous islands at its w. extremity and in some other parts. The shores of the middle portion are precipitous, and toward the w. end grandly picturesque with lofty snow-covered peaks and great glaciers. (See description by Mrs. Agassiz, *Atlantic Monthly*, 1873, Jan.). The claim to the region contiguous is disputed

between Chili and Paraguay.—See also Charles Darwin's *Voyage round the World,* reprint, N. York, 1878; *Adventures in Patagonia,* by the Rev. Titus Coan, 1880.

MAGELLANIC CLOUDS, n. plu. *măj'ĕl-ăn'ĭk klowdz:* the two whitish nebulæ or cloud-like substances near the south pole of the heavens—so called from *Magellan* the navigator. MAGELLANIC-PROVINCE, n., in *zool. and geog.,* a marine province including the coasts of Tierra del Fuego and the Falkland Islands, those of S. America from Point Melo on the e. to Concepcion on the west.

MAGENDIE, *mâ-zhŏng-dē',* FRANÇOIS: French physiologist and physician: 1783—1855; b. Bordeaux. He became a pupil of Boyer, celebrated anatomist. He was appointed physician to the Hôtel-Dieu; was elected a member of the Acad. of Sciences 1819, and succeeded Recamier in the chair of anatomy in the College of France 1831. Magendie's chief physiological works are: *Précis Elémentaire de Physiologie* (1816), which went through several editions, and was enlarged into the *Elémens de Physiologie,* which was translated into English, and was for many years the best work on physiology in this language; *Leçons sur les Phénomènes Physiques de la Vie* (1836-42); *Leçons sur le Sang* (1839); *Leçons sur les Fonctions et les Maladies du Système Nerveux* (2 vols. 1839); and *Rechcrches Philosophiques et Cliniques sur le Liquide Cephalo-rachidien ou Cerebro-spinal* (1842). He was founder, and for ten years editor of the *Journal de la Physiologie Expérimentale,* in which are recorded many of the experiments on living animals which gained for him, too deservedly, the character of an unscrupulous vivisector.

He was the first to prove experimentally that the veins are organs of absorption; he pointed out that non-nitrogenous foods are non-nutritious, and that an animal cannot live solely on any one kind of food; he performed an important series of experiments on the cause of death when air is admitted into the larger veins; and he shares, with Sir Charles Bell, the discovery of the separate functions of the two roots of the spinal nerves.

MAGENTA, n. *mă-jĕn'tă* [after *Magenta,* in Lombardy, where a battle was fought in 1859, at the time of its discovery]: a rose-colored dye, one of the earliest obtained from the aniline dyes. It may be prepared from aniline oil by digesting the aniline with arsenic acid, or with nitrobenzene and ferrous chloride. When the oxidation is complete, the rosaniline hydrochloride is precipitated by the addition of common salt in large excess, the hydrochloride being formed by double decomposition, and thrown down because it is but sparingly soluble in salt solutions. Consult: Benedikt, *Chemistry of the Coal-Tar Colors.*

MAGENTA, *mâ-jĕn'tâ:* Italian town, province of Milan, on the high road and railway from Novara to the

city of Milan, distant 12 m. Its district yields excellent wine and abundance of mulberries. In the campaign of 1859 Magenta was the scene of a decisive victory won by the French and Sardinians over the Austrians. It has given its name to one of the colors derived from coal-tar: see DYE-STUFFS. Pop. 8,000.

MAGEROE, *mâ'ghĕr-ô-ĕh:* island in the Arctic Ocean; most northerly of the larger European islands. It belongs to Norway, lies close to the coast of Finmark, and terminates on the n. in North Cape, 970 ft. in height, lat. 71° 10′ n., long. 25° 50′ e. Mageröe is 22 m. long, 15 m. broad; irregular in shape, and deeply indented by bays. It supports a few Norwegian and Lappish families.

MAGG, v. *măg* [Gael. *mag,* a soft, plump hand, a paw: OE. *mages,* the hands]: in *Scot.* and *slang,* to steal; to pilfer. MAGG'ING, imp. MAGGED, pp. *măgd.* MAGG, n. or MAIK, n. *māk,* a halfpenny. MAGGS, n. plu. *măgz,* the gratuity expected by carters, porters, and the like, from those to whom they carry or drive goods.

MAGGIORE, a. *măd-jō'rā* [It.]: in *music,* greater.

MAGGIORE, LAGO, *lâ'gō mâd-jō'rā,* or LAKE OF LUCAR'NO: one of the largest lakes in Italy, *Lacus Verbanus* of the Romans; situated for the most part in Italy, but also partly in the Swiss canton of Ticino. Of its 82 sq.m. 65 belong to Italy, 17 to Switzerland. It is 38 m. long, greatest breadth about 7 m., general breadth 2 to 4 m. It is 650 ft. above the level of the sea, and in some places is 2,500 ft. deep. The river Ticino flows through it. In a s. w. expansion of the lake are the Borromean Isles (q.v.). On the n. and w. it is surrounded by granitic mountains; on the s. and e. by vineyard-covered hills. The lake is liable to floods. Twenty-three species of fish have been enumerated in it. On its shore are a large number of villages and cities noted for beautiful scenery and historic connections.

MAGGOT, n. *măg'gŏt* [W. *magu,* to breed; *magad,* a brood, a multitude: comp. Gael. *magair,* to crawl]: a worm or grub, particularly of the flesh-fly; a whim or fancy. MAG'GOTY, a.-*gŏt-ĭ,* full of maggots; whimsical; capricious.—*Maggot* is the popular name of the larvæ of many kinds of dipterous insects, particularly of the great family *Muscidæ* (Flies), though it is often given to those also of *Œstridæ* (Bot-flies, etc.). It denotes more commonly those larvæ which feed on animal, than those which feed on vegetable substances; and it denotes particularly those—of which there are very many species—which feed on putrescent animal matter. *Corpse-worms* are the larvæ of *Sarcophaga mortuorum,* a fly always ready—at least in Europe—to lay its eggs in human bodies deposited in open vaults. Maggots of the Flesh-fly (q.v.) are used to feed pheasants and as fish-bait, and, to procure them in abundance, dead bodies of animals are often exposed to putrefaction in the open air.

MAGI, n. plu. *mā́jī*, or **MAGIANS**, n. plu. *mā́jĭ-ănz* [L. *magi*, magians; F. *mage*, a magian—from L. *magus;* Gr. *magos*, a magian: comp. Gael. *maithe*, chiefs, good men —from *math*, good, fitting]: religious caste among the Persians who worshipped light or fire as the emblem of the invisible God, who cultivated a knowledge of astronomy and the secrets of nature, and to whom were attributed mysterious powers, and the practice of divination: later the term was applied specially to the followers of Zoroaster, who held two principles, one of good, the other of evil. **MA′GIANISM**, n. *-ăn-ĭzm*, the philosophy or doctrines of the magi. The origin of the term *Magi* has recently been brought to light by Assyrian scholars. In Accadian, the language of the early Scythian or Turanian inhabitants of Babylonia and Media, *inga* signifies 'august,' 'reverend,' and was the title of their learned and priestly caste. These Accadians had made great advances in astronomy, or rather astrology, and were much addicted to divination and similar mysterious arts. The Semitic nations, afterward dominant in Babylonia and Assyria, adopted not only the learning and many of the religious observances of the early inhabitants, but also a number of the special forms, and among others the name for the learned caste, modifying it to suit their own articulation; and out of the Semitic form the Greeks made *magos*. Under the Persian empire the magi rose to the very highest importance. They were not only the 'keepers of the sacred things, the learned of the people, the philosophers and servants of God,' but also diviners and manties, augurs and astrologers. They called up the dead, either by awful formulas which were in their exclusive possession, or by means of cups, water, etc. They were held in such reverence that no transaction of importance took place without or against their advice. The education of the young princes was in their hands; also they were the constant companions of the ruling monarch. With such 'wise men,' gathered probably from various nations by Nebuchadnezzar, and intrusted by him with important functions (Jer. xxxix. 3, 13; Dan. i. 4, 20; ii. 24; v. 11; vi. 3, 16, 26; etc.), was the prophet Daniel associated. For their religious system itself, see **GUEBRES**: **PARSEES**. Zoroaster (q.v.) (*Zerdusht*) reorganized, in the course of his great religious reform, also the body of the magi, chiefly by reinforcing the ancient laws about their mode of life, which had been prescribed to be one of the simplest and severest, befitting their sacred station, but which had become one of luxury and indolence; and by re-instituting the original distinction of the three classes of *Herbeds* (disciples), *Mobeds* (masters), and *Destur Mobeds* (complete masters). The food, especially of the lower class, was to consist only of flour and vegetables; they wore white garments, slept on the ground, and were altogether subjected to the most rigorous discipline. The initiation consisted of awful and mysterious ceremonies. Purifications of several months'

duration preceded it, and it was long before the stage of the disciple's 'being led into the realms of the dead' was proceeded with. Gradually, however, their influence, once powerful enough to raise them to the throne itself (Sassanides), began to wane; and whereas formerly a number of 80,000 delegates of magi had to decide on the affairs of state and religion, this council, in later times, dwindled to seven; and from being the highest caste, the priests of God, and the 'pure of mind, heart, and hand,' they fell to the rank of wandering jugglers, fortune-tellers, and quacks, and gave the name Magic (q.v.) to the art of sleight-of-hand, and performance of conjuring tricks.

The Eastern Magi of the older and purer class possess an interest which has been felt through all the Christian Church, from their recorded appearance at the cradle of the infant Christ, Matt. ii. 1,2,7–12. The narrative, to the last degree simple, has been made the nucleus for an enormous mass of ecclesiastical legend, entertaining but quite worthless. All that we know of them, is that 'from the East'—general term for a vast region remotely e. and n.e. of Palestine—came 'wise men,' doubtless students and observers of the heavens since some celestial phenomenon, 'his star' had decided their coming. They arrived at Jerusalem, were summoned into conference with King Herod, proceeded to Bethlehem, presented their gifts appropriate to one of royal birth, gave homage, and departed 'by another way' to their distant home—perhaps Persia. No reason whatever exists for supposing them to be kings, or to have been three in number. The legendary concretion around this beautiful simple story is amazing. We are told of 'three kings, Gaspar, Melchior, and Balthazar'; of their journey with a vast retinue, of which they left 7,000 men beyond the Euphrates, bringing 1,000 to Jerusalem. We are told of their bodies discovered in the east and brought to Constantinople, thence transferred to the cathedral of Milan, and thence in the 12th c. to Cologne, in whose majestic cathedral the three bodies have now for six centuries been shown to visitors.

More beautiful than all legendary splendor and artistic adornment that have gathered round the visit of the Magi, is the simple fact that the highest and purest culture of the old heathen world was drawn from far lands to behold and to give honor to the Babe that was born at Bethlehem the King of men and the Heir of all the ages.—See EPIPHANY.

MAGIC, n. *măj'ĭk* [L. *magĭcus;* Gr. *magĭkos*, belonging to magic—from L. *magus*, a magian: Gr. *mageia*, enchantment, the rites of the ancient Persian Magi (see MAGI)]: pretended art or science of working by the aid or power of spirits; sorcery; enchantment; the secret operation of natural causes, as natural magic: see below. MAGIC, a. *măj'ĭk*, or MAGICAL, a. *măj'ĭ-kăl*, pertaining to magic; used in magic; performed by spirits or the invisible powers of nature. MAG'ICALLY, ad. *-lĭ*. MAGICIAN, n. *mă-jĭsh'ăn*, one professedly skilled in magic or the black art. MAGIC-LANTERN: see below. MAGIC-SQUARE: see below. MAGIC WAND, rod of a magician.—SYN. of 'magic, n.': necromancy; witchcraft; conjuration.

MAG'IC [see MAGI]: general name for wonderful effects produced in some mysterious way. Medicine in its early form was intimately allied to magic. It would soon be discovered by accident that certain plants produced powerful effects, both good and bad, on the bodies of men and animals; and the reverence arising from their real virtues would lead to ascribing to them all manner of imaginary ones. The laws of nature being little known, one thing was not more incredible than another; and effects were assigned to causes in the most arbitrary and accidental way. The Rosicrucian physicians treated a case of wounding by applying the salve to the weapon instead of to the wound itself; and this may be taken as the type of magical, as contrasted with rational medicine. In modern times, drugs are drawn mostly from the mineral and vegetable kingdoms; but while the healing art was in the mystic stage, animal substances were most esteemed. If the juice of a plant could affect the living body, how much more must the life-blood of another animal! And the rarer the kind of blood, so much the rarer the virtue. The blood of an innocent child, or of a virgin, was believed to cure the leprosy; that of a criminal put to death by law, the falling sickness. The hearts of animals, as being the seat of life, were held to be potent drugs. The fat of a hog had been found by experience to benefit a sore; what virtue, then, must there be in human fat, with the solemn mysteries of the grave about it!

In early stages of society, women are the physicians; while the men fight and hunt, women gather herbs and decoct salves for their wounds; and the art would naturally become a sort of profession in the hands of the older women who had reputation for superior skill of that kind. Mostly a blind groping—a mystery to themselves as well as others—their operations were viewed with awe. The 'wise woman,' with her kettle, cooking her mysterious broth, adding ingredient after ingredient (for the rarer, the more numerous and horrible they were, would not the compound be the more efficacious?), inspired not only hope, but fear; for the art might be, and doubtless was, used to hurt as well as to heal. Roman matrons were often accused and convicted of poisoning by their decoctions; and during seasons of pes-

tilence, these female druggists were persecuted with indiscriminate fury, as were witches afterward in Europe. So much was the notion of poisoning uppermost in the Roman mind respecting them, that *venefica*, literally 'a poison-maker,' was the general name for a preparer of magic medicines, an enchantress or sorceress—the corresponding character to our witch: see WITCHCRAFT.

The operation of magical medicines was not, as with those of the modern pharmacopœia, confined to phyiscal effects on living bodies to which they were applied; associated with incantations and other ceremonies, as they always were, they could be made to produce almost any desired effect—raise or lay storms, fertilize a field, or blast it; kill or cure a man, absent as well as present; and give the power of predicting future events. How a belief in imaginary virtues of things may grow out of the experience of their real virtues, is indicated by Dr. Livingstone, when speaking of the belief in rain-making among the tribes in the heart of s. Africa. The African priest and the medicine-man are one and the same, and his chief function is to make the clouds give out rain. The preparations for this purpose are various—charcoal made of burned bats; internal parts of animals, as lions' hearts and hairy calculi from the bowels of old cows; serpents' skins and vertebræ; and every kind of tuber, bulb, root and plant to be found in the country. 'Although you disbelieve their efficacy in charming the clouds to pour out their refreshing treasures, yet, conscious that civility is useful everywhere, you kindly state that you think they are mistaken as to their power; the rain-doctor selects a particular bulbous root, pounds it, and administers a cold infusion to a sheep, which in five minutes afterward expires in convulsions. Part of the same bulb is converted into smoke, and ascends toward the sky; rain follows in a day or two. The inference is obvious.' The religion of this part of Africa may be characterized as medicine-worship. In a village of the Balonda, Dr. Livingstone saw two pots with charms or medicines kept in a little shed, like idols in a niche. For an idol they sometimes take a piece of wood, and carve a human head on it, or simply a crooked stick, when there is no professed carver to be had; but there is nothing divine about it until it is dotted over with a mixture of medicine and red ochre. Packets of medicine are worn as charms about the person, to ward off evils of all kinds. The female chief Manenko was hung all over with such charms; and when she had to cross a river, her travelling medicine man waved medicines over her, and she took some in her hand to save her from drowning.

During the middle ages, and almost till the 18th c., magic was greatly studied in Europe, and could boast of distinguished names, who attempted to treat it as a grand and mysterious science, by which the secrets of nature could be discovered, and a certain god-like power acquired over the 'spirits' (or, as we should now say,

the 'forces') of the elements. The principal students and professors of magic during the period referred to, were Pope Sylvester II., Albertus Magnus, Roger Bacon, Raymond Lully, Pico della Mirandola, Paracelsus, Cornelius Agrippa, Trithemius, Van Helmont, and Jerome Cardan.—See Horst's *Von der Alten und Neuen Magie, Ursprung, Idee, Umfang und Geschichte* (Mentz 1820); and Ennemoser's *Geschichte der Magie* (2d ed. Leip. 1844: translated into English by W. Howitt, 2 vols. Lond. 1854). For an interesting account of the discipline and ceremonies of the 'art,' consult the *Dogme et Rituel de la Haute Magie* (Paris 1856), by Levi; and *Histoire de la Magie*, by Christian (Paris 1870).

For some of the different forms which the belief in magic has assumed, see AMULET: AUGURIES AND AUSPICES: DIVINATION: INCANTATION: WITCHCRAFT: also ALCHEMY: ASTROLOGY.

MAGIC LANTERN: optical instrument by which magnified images of small pictures are thrown upon a wall or screen. The instrument consists of a lantern containing a powerful argand lamp; in the side of the lantern is inserted a horizontal tube, on a level with the flame, and the light is made to pass through the tube by reflection from a concave mirror placed on the opposite side of the lantern. The tube is furnished with two lenses, one at each end; the inner one is a hemispherical illuminating lens of short focus, to condense a strong light on the picture, which is inserted into the tube, between the lenses, through a transverse slit. The other end of the tube is fitted with a double convex lens, which receives the rays after passing through the picture, and throws them upon the screen or wall. The pictures are formed with transparent varnish on glass slides, and must be inserted into the tube in an inverted position, in order that the images may appear erect. If the screen on which the image is thrown be at too great a distance, the image will become *indistinct* from the lessened intensity of the light, and *distorted* by the increasing spherical and chromatic aberration, though this latter defect may be obviated by the use of a screen of the same curvature as the outside surface of the lens. This instrument, generally used as a toy, is occasionally used to produce enlarged representations of astronomical diagrams, so that they may be well seen by an assembly. Phantasmagoria, dissolving views, etc., are produced by a particular manipulation of the same instrument.

MAGIC MIRROR OF JAPAN: a kind of mirror having a curious property of reflection, long a puzzle to scientists. The common mirror is one of the most conspicuous and universally diffused artificial objects in Japan. It is seen in the temples; in the hands of the street-conjurers; in all private houses, even in those nearly destitute of other furniture; in pictures; in the royal regalia. It is the most important part of a woman's trousseau. 'The two Great Divine Palaces,' at Isé, which harbor the first-made Mirror, command the same reverence

from the Japanese that the Holy Sepulchre commands from the Greeks and Armenians. It is usually circular, 3 to 12 in. in diameter, of bronze, with bronze handle encased in bamboo; the reflecting surface, polished by a mercurial amalgam, is more or less convex; the back displays a finely executed raised design of birds, flowers, dragons, or some scene of Japanese mythology.

The magic property is possessed by but 2 or 3 per cent. of mirrors, and these cost 10 or 20 times as much as the rest. It consists in the fact, that when looked at directly, the mirror reflects the objects in front like ordinary mirrors; but when a bright light is reflected from its polished face upon a screen, a bright-lined image on a dark ground, representing more or less perfectly the figures on the back of the mirror, is seen depicted on the screen. The explanation of this property has been the object of long and manifold discussion. Some were of opinion that a copy of the figures on the back was drawn on the polished face, but so skilfully concealed as to be invisible in ordinary lights. More recent theories ascribe the cause to the difference in density in the bronze plate; but it has been demonstrated that the phenomenon arises from inequality of curvature in the polished surface, the thicker portions (having the figures to the back), being flatter than the remainder of the convex surface.

MAGIC SQUARE, in mathematics: a set of numbers so arranged in the form of a square that the sums of each row, of each column, and of each diagonal are all equal. Simple examples are:

2	7	6
9	5	1
4	3	8

1	14	15	4
12	7	6	9
8	11	10	5
13	2	3	16

Magic squares with an *odd* number of places are easily constructed by the following rule: Put 1 in the place beneath the central one and let the other numbers follow, in their natural order, in the empty places in either diagonal direction. Coming to a place already filled, pass vertically down to the next place below. Arriving at the end of a column or row, proceed to the opposite end of the next one. The construction for an *even* number of places is more complicated. Magic squares are mere curiosities, and have no importance for the general development of mathematics. They were known to the Hindus, Chinese, and Arabs, and during the Middle Ages they played a part in the widespread number-mysticism and occultism. Stifel (1486—1567) was the first to study them in a scientific way. Despite their lack of real importance, they have attracted the lively interest of some of the highest mathematical minds from Fermat down to the present day.

MAGILP, n. *ma-gĭlp′*, or MAGILPH, n. *ma-gĭlf′*, or MEGGELLUP, n. *mĕg′ĕl-ŭp* [unascertained]: mixture of linseed-oil and mastic varnish, thinned with turpentine as requisite, used by artists as a vehicle for colors.

MAGILUS, *măj′ĭl-ŭs:* very curious genus of gasteropodous mollusks, of the ord. *Tubulibranchiata,* inhabiting the Red Sea and the Indian Ocean. They have, at first, shells of the ordinary form of spiral univalves, and establish themselves in little hollows of madrepores, where they remain, enlarging the shell into a long tube as the madrepore grows, and thus preventing themselves from being shut in. The tube is sometimes three ft. long, and the animal deserts entirely the spiral part of the shell, and lives in the mouth of the tube, which it closes against danger by an operculum, the upper part being wholly or partially filled up with solid matter.

MAGINDANA′O, or MINDANA′O. See PHILIPPINE ISLANDS.

MAGISTRATE, n. *măj′ĭs-trāt* [F. *magistrat*—from L. *magistrātus,* the office or rank of a master or chief—from *magister,* a master]: public civil officer of any rank from the lowest to the highest, who is invested with executive or judicial authority; term commonly denoting a justice of the peace (q.v.). MAGISTERIAL, a. *măj′ĭs-tē′rĭ-ăl,* pertaining to a magistrate; authoritative; lofty; despotic. MAG′ISTE′RIALLY, ad. *-lĭ.* MAG′ISTE′RIALNESS, n. *-nĕs,* the air and manner of a master; imperiousness. MAGISTRACY, n. *măj′ĭs-tră-sĭ,* the office or dignity of a magistrate; the body of magistrates.—SYN. of 'magisterial': dogmatical; arrogant; stately; august; pompous; imperial; lordly; haughty; proud; domineering; dignified; commanding.

MAGLIABECHI, *mâ-lyâ-bĕk′ē,* ANTONIO DA MARCO: Italian scholar and court librarian: 1633, Oct. 28—1714, July 4; b. Florence; of respectable but indigent family. From his earliest years he displayed an inordinate passion for book-knowledge. Having speedily mastered the Greek, Latin, and Hebrew languages, he literally entombed himself among books, of which disorderly piles encumbered every portion of his dwelling, and lay in a heterogeneous litter around his feet. In his daily habits, Magliabechi grew regardless of social and sanitary requirements; and such was his avidity of study, that he finally denied himself even requisite repose. His memory was prodigious, and not only enabled him minutely to retain the contents of his multitudinous books, but also to supply, on occasion, the most exact reference to any particular page or paragraph, the place of each book being indicated with precision in the midst of their apparently inextricable masses. Magliabechi was regarded as the literary prodigy of his times. He was appointed court-librarian by the grand dukes of Florence; and the many tributes of respect tendered by royal and distinguished personages to his wonderful erudition, fostered in an inordinate degree his love of fame and praise,

which rendered him intolerant of literary merit in others, and involved him in bitter literary squabbles. He died at Florence, in the 81st year of his age, leaving no written record of his immense encyclopedic knowledge. His valuable library of 30,000 vols. he bequeathed to the grand duke, who pased it over to M.'s native city of Florence; it is now a free library, and bears the name of its collector.

MAGMA, n. *măg'mă* [L. and Gr. *magma*, the dregs of an unguent]: dregs; a crude mixture of mineral or organic matter in a pasty state.

MAGNA CHARTA, n. *măg'nă kâr'tă* [L. *magna*, great; *charta*, paper, a charter]: the great charter obtained by the Eng. barons from King John of England, 1215, June 15; viewed by after-ages as the basis of English liberties. The oppressions and exactions of a tyrannical and dastardly sovereign called into existence a confederacy of the barons or tenants-in-chief of the crown, who took up arms for redress of their grievances. Their demand was for the restoration of the laws of Henry I.; laws which might probably be characterized as an engrafting of Norman feudalism on the 'ancient custom of England,' or previously existing Saxon and Danish free institutions, in which 'ancient custom' were comprehended the laws of Edward the Confessor. A conference between the sovereign and the barons was held at Runnymede, near Windsor, a place where treaties regarding the peace of the kingdom had often before been made. King and barons encamped opposite each other; and after several days' debate, John signed and sealed the charter with great solemnity.

The Great Charter reared up a barrier against the abuse of the royal prerogative by a series of provisions for the protection of the rights and obligations of the feudal proprietor. It redressed a variety of grievances connected with feudal tenures, some of them now so long obsolete as to be with difficulty intelligible. There are minute provisions regarding the relief of heirs, wardship, marriage of heirs and of their widows. No scutage or aid is to be imposed without the authority of the common council of the kingdom, except on the three great feudal occasions of the king's captivity, the knighting of his eldest son, and the marriage of his eldest daughter. The liberties of the city of London, and other towns, burgs, and ports, are declared inviolable. Freedom of commerce is guaranteed to foreign merchants. Justice is no longer to be sold, denied, or delayed. The court of common pleas, instead of, as formerly, following the king's person in all his progresses, is to be permanently fixed at Westminster; assizes are to be held in the several counties, and annual circuits are established. Regulations are made for the efficiency of the inferior courts of justice. The protection of life, liberty, and property from arbitrary spoliation is the most important feature of the charter. 'No freeman shall be taken or imprisoned, or be disseised of his freehold, or liberties, or free

customs, or be otherwise damaged, nor will we pass upon him, nor send upon him, but by lawful judgment of his peers, or by the law of the land'—a provision which recognized a popular tribunal as a check on the official judges, and may be deemed the basis of the writ of Habeas Corpus. No one is to be condemned on rumors or suspicions, but only on the evidence of witnesses. Protection is afforded against excessive amercements, illegal distresses, and various processes for debts and services due to the crown. The fines imposed are in all cases to be proportioned to the magnitude of the offense, and even the villein or rustic is not to be deprived of his necessary chattels. There are provisions regarding the forfeiture of lands for felony. The testamentary power of the subject is recognized over part of his personal estate, and the rest is to be divided between his widow and children. The independence of the church is also provided for.

These are the most important features of that Charter which occupies so conspicuous a place in history, and which establishes the supremacy of the law of England over the will of the monarch. A charter was at the same time granted to mitigate the oppressions of the Forest Laws (q.v.). The terms dictated by the barons to John included the surrender of London to their charge, and the Tower to the custody of the primate till Aug. 15 following, or till the execution of the several articles of the Great Charter. 25 barons, as conservators of the public liberties, were invested with extraordinary authority, which empowered them to make war against the sovereign in case of his violation of the Charter. Several solemn ratifications were required by the barons both from John and from Henry III.; and a copy of the Great Charter was sent to every cathedral, and ordered to be read publicly twice a year. The copy preserved in Lincoln Cathedral is regarded as the most accurate and complete; and a fac-simile of it was engraved by order of the late board of commissioners on the public records. The Great Charter and Charter of the Forests are printed with English translations, and prefixed to the edition of the Statutes of the Realm published by the Record Commission.

MAGNA GRÆCIA, *măg'na grē'shĭ-a* (Gr. *Hē Megalē Hellas*): ancient name of that part of s. Italy which was thickly planted with Greek colonies. When it first obtained this appellation, is unknown, but it must have been at an early period. Polybius says it was so called in the time of Pythagoras. Some writers include under the term the Greek cities in Sicily; others restrict it to those on the Gulf of Tarentum, but in general it is used to denote all the Greek cities in s. Italy, exclusive of those in Sicily. The oldest settlement is believed to have been *Cumæ*—though it is doubtful whether it and its colonies, *Dicæarchia* and *Neapolis*, were really embraced under the designation M. G.; while the period assigned to its foundation—viz., soon after the Trojan

war—is obviously fanciful. If we fix about B.C. 8th or 9th c. we shall probably be not far wrong. Of the other Greek settlements in Italy—most, if not all of which were later than those in Sicily—the earliest was Sybaris (founded by the Achæans B.C. 720); next, Croton (by the Achæans, B.C. 710); then Tarentum (by the Spartans, B.C. 708); Locri (by the Locrians, B.C. 708, according to others, 30 or 40 years later); Rhegium (by the Chalcidians; date of origin not known, but believed by some to be older than even Sybaris); Metapontum (by the Achæans, B.C. 700–680); and Velia (by the Phocæans, B.C. 540). These cities became parents of many others.

Of the earlier history of M.G., we know almost nothing. The settlements appear to have risen rapidly to power and wealth, partly by the brisk commerce which they carried on with the mother-country; partly also, it is conjectured, by an amalgamation with the Pelasgic (and therefore kindred) natives of the interior. This, we are told by Polybius, actually happened at Locri, and most probably elsewhere also. About B.C. 530, Pythagoras the philosopher arrived at Crotona, and soon acquired an influence in M. G. which was quite wonderful, though it did not last long. The quarrels between the different cities were often bitter and bloody; and finally, B.C. 272–271, the Romans conquered the whole of Lower Italy. Long before this, several of the cities had disappeared. Sybaris, for example, was destroyed by the Crotonians as early as B.C. 510; and the rest more or less rapidly sank into decay, and were, in the time of Cicero, with a few exceptions, reduced to utter ruin.

MAGNANIMOUS, a. *măg-năn′ĭ-mŭs* [L. *magnanĭmus*, great-souled—from *magnus*, great; *anĭmus*, soul, mind: It. *magnanimo;* F. *magnanime*, magnanimous]: great of mind; elevated in soul or sentiment; not selfish; disinterested. MAGNAN′IMOUSLY, ad. *-lĭ*. MAGNANIMITY, n. *măg′nă-nĭm′ĭ-tĭ* [F. *magnanimité*]: greatness of mind; elevation in soul or in sentiment; great generosity and disinterestedness.

MAGNATE, n. *măg′nāt*, MAG′NATES, n. plu. *-nāts* [F. *magnats*, grandees of Poland or Hungary—from mid. L. *magnātēs*, the greater vassals—from L. *magnus*, great]: a noble or grandee; a man of rank and wealth.

MAGNESIA, n. *măg-nē′shĭ-ă* [F. *magnésie*, magnesia: Gr. *magnētēs*, the loadstone or magnet: *Magnesia*, a country of Thessaly—*lit.*, the Magnesian stone]: one of the primitive earths, used in medicine in the form of a white, light, tasteless powder; oxide of the metal magnesium (see MAGNESIUM, below). MAGNESIAN, a. *măg-nē′shĭ-ăn*, resembling or containing magnesia. MAGNESIC, *măg-nē′zĭk*, of or pertaining to magnesia. MAGNESITE, n. *măg′nĕ-zīt*, a native carbonate of magnesia occurring in white, hard, stony masses. MAGNE′SIUM, n. *-shĭ-ŭm*, an elementary body forming the metallic base of magnesia— nearly related to zinc by its properties; in *OE.*, a

mineral. MAGNESIUM LIGHT, a brilliant light produced by burning magnesium wire. SULPHATE OF MAGNESIA, the well-known Epsom salt. MAGNESIA ALUM, a substance occurring in white fibrous masses and efflorescences in S. America. MAGNESIAN LIMESTONE, any limestone containing more than 20 per cent of magnesia. See DOLOMITE.

MAGNESIA, *măg-nē'shĭ-a:* most eastern division of Thessaly in ancient Greece; narrow mountainous region between the chain of Ossa on the w. and the sea on the e., s. of the river Peneus. The powers of natural *magnets* were observed by the Greeks first in this district; whence the name.

MAGNE'SIA AD MÆAN'DRUM: ancient city of Ionia, near the Mæander (whence its name), 15 Roman m. from Miletus and about as far from Ephesus. It was settled by a Thessalian tribe of the Magnetes, and was not one of the cities of the Ionic league. It was very prosperous and rich, and had a very famous temple of Artemis, a rival to that at Ephesus. The ruins of the temple have recently been brought to light by excavation.

MAGNE'SIA AD SIP'YLUM: ancient city in n. Lydia, near the Hermus, at foot of Mt. Sipylus (whence its name). See MANISA.

MAG'NESITE: a white, porcelain-like mineral (magnesium carbonate, $MgCO_3$; carbon dioxide 52.4 per cent., magnesium oxide 47.6 per cent.), usually found associated with serpentine, talcose slates, and dolomite. The magnesite of commerce comes from several localities; notably, Veitsch in Styria, Austria, where it occurs in conformable beds in a Silurian formation; at Frankenstein in Silesia, where a very pure variety is found; at Bolton, Canada, there is a ledge 60 ft. wide, which is tinged with green by chromium. The quality, however, is not good. In the Red Mountain mining district, Santa Clara and Stanislaus cos., Cal., is found the largest known deposit in the world. Here there are several ledges from 20 to 60 ft. wide and of very pure quality. It is also found in Napa, Sonoma, Fresno, Placer, Mariposa, Monterey, and San Luis Obispo cos., Cal. Magnesite is used as a bleaching agent in paper-making, and for making an excellent artificial stone for interior decoration. Its chief use, however, is in the manufacture of firebrick. In brick-making it is calcined, the gas CO_2 being collected and sold for charging mineral water and for use in cold-storage plants, instead of ammonia, and the resulting magnesium oxide mixed with a binding material and pressed into brick. From the pure mineral metallic magnesium and salts, as Epsom salts and magnesium chloride, are manufactured.

MAGNESIUM [symbol Mg; at. wt. = 24.36; H = 1; sp. gr. = 1.74]: occurs in nature as the carbonate, termed magnesite, $MgCO_3$; as dolomite, a double salt with cal-

cium carbonate, $MgCO_3$, $CaCO_3$. The hydrated sulphate and chloride are found in many mineral springs; and, in combination with other salts, at Stassfurt (Germany). United with silicic acid, magnesium forms olivine, serpentine, meerschaum, and asbestos. The metal is prepared by electrolyzing fused carnallite, which is found in considerable quantities and is a double salt, potassium magnesius chloride, $MgCl_2.KCl.6H_2O$. The metal resembles zinc, but is not quite so volatile. It burns in air with a bright light which is very rich in chemically active rays, consequently magnesium is used in the manufacture of fireworks, and, when mixed with 1.7 parts of potassium chlorate, it forms a photographic flash light. Hydrogen is evolved by the action of acids or highly heated steam on magnesium and when burnt in air it yields a white powder consisting of the oxide MgO, and nitride, Mg_3N_2. In the laboratory, magnesium is used for the preparation of boron, silicon and of many metals from their oxides. Magnesium oxide, also termed magnesia or calcined magnesia, MgO, is a white, bulky, highly infusible powder used for making crucibles, for lining electric furnaces, and also in medicine, chiefly to neutralize acidity in the mouth or stomach. The manufactured preparations, termed *magnesia alba,* are mixtures of the carbonate and hydroxide and have a variable composition. They are used in medicine. *Magnesium chloride,* $MgCl_2.6H_2O$, is found largely in nature. The bitter taste of sea water is due to the presence of this salt, which is used to 'load' or increase the weight of cotton goods. It is very soluble and resembles calcium chloride. *Magnesium sulphate* (Epsom salts), $MgSO_4.7H_2O$, occurs in many mineral springs. It is employed in the manufacture of sodium and potassium sulphates, for 'loading' cotton goods and as a safe purgative. Analytically magnesium is detected and its quantity determined by the formation of the double ammonium phosphate, $NH_4MgPO_4.6H_2O$.

The compounds of magnesium employed in medicine are magnesia, its carbonate and its sulphate.

Magnesia is presented in small doses (from 10 grains to a scruple), as an antacid, in cases of undue acidity of the stomach, heartburn, and abnormal acidity of the urine; in larger doses (from a scruple to a drachm), it produces distinct purgative effects. It is useful, especially when combined with rhubarb and a little ginger (in the form of Compound Rhubarb Powder or Gregory's Mixture), as a purgative for children, in acid conditions of the alimentary canal.

Magnesium carbonate (*magnesia alba*) acts in the same manner as magnesia, except that it is less active, since more than half of it consists of water and carbonic acid. A drachm of carbonate of magnesia, the juice of one lemon, and a wine-glassful of water, constitute an

agreeable laxative, a magnesium citrate being thus formed.

Magnesium sulphate is a purgative in very general use. It is much employed in febrile affections, and when the portal system is congested; but it may be used in almost any case in which a mild but efficient laxative is required. Its dose varies from 2 to 4 or 6 drachms. In combination with the infusion of senna, it forms the ordinary *Black Draught.*

MAGNE'SIUM LIGHT: brilliant light produced by burning magnesium wire. Although the discovery of the metal magnesium was made by Sir H. Davy 1808, it was little more than a chemical curiosity for about half a century. In 1830, a French chemist, Bussy, obtained globules of the metal; and 1856 Deville and Caron obtained magnesium on a larger scale than any of their predecessors. In 1859, Bunsen of Heidelberg, and Roscoe (now of Manchester, England), published a memoir on the great importance of magnesium for photographic purposes, owing to the high refrangibility and the great actinic power of the light emitted by burning magnesium wire. In 1862, Sonstadt succeeded in producing specimens of the metal, varying from the size of a pin's head to that of a hen's egg; and soon began manufacturing on a considerable scale.

The magnesium light has many advantages. Its color approaches very much nearer to daylight than that of the light from oils, candles or coal gas. As compared with the sun, its luminous intensity is $\frac{1}{525}$, but its chemical intensity is $\frac{1}{36}$, and this high actinic power makes it specially valuable for photographic purposes; it gives off no noxious vapors; but as it burns, white clouds of the vapor of magnesia are formed. It has been used for photography, and for exploring and photographing dim or underground caverns and structures—such as the Pyramids. It cannot, however, compete with the electric light as now perfected, and is much more costly. Still, for any purpose where, for a comparatively brief time, a very intense light is required, magnesium wire or ribbon has about it almost the simplicity of a wax taper; nor are the lamps at all complex by which the metal may be burned for hours continuously. Its use is almost wholly for burning in photographic lamps, for flash lights, and for fireworks. It has been attempted to make magnesium useful for other purposes. Various alloys have been made with it and other metals, such as lead, tin, zinc, cadmium, and silver; but they all are brittle and liable to change.

MAGNET, n. *măg'nĕt* [OF. *magnete* for *manete*—from L. *magnētem,* magnesian; Gr. *magnētēs,* for *lithos magnētēs,* the magnesian stone, the magnet—said to be so called from *Magnesia* in Thessaly, where first found: It. *magnete,* a magnet]: the loadstone (q.v.), which has the property of attracting iron, and of pointing to the poles when freely suspended; a bar of steel, to which the prop-

erties of the loadstone are imparted by contact; any piece of iron rendered powerfully attractive by a galvanic current; any powerful attraction. MAGNETIC, a. *măg-nĕt'ĭk*, or MAGNET'ICAL, a. *-ĭ-kăl*, possessing the property of attracting iron; attractive; having the peculiar property of turning due north and south when left freely suspended. MAGNET'ICALLY, ad. *-kăl-lĭ*. MAGNETICS, n. plu. *măg-nĕt'ĭks*, the science or principles of magnetism. MAGNETING, the process of separating particles of iron from those of brass and copper turnings by the use of a magnet, prior to remelting. MAGNETIZE, v. *măg'nĕt-īz*, to render magnetic; to affect with magnetism. MAG'NETIZING, imp. MAG'NETIZED, pp. *-īzd*. MAG'NETIZER, n. *īz-ẽr*, one who or that which imparts magnetism. MAG'NETISM, n. *-ĭzm*, the peculiar attractive and repulsive power of the natural magnet or loadstone; the peculiar property or power possessed by many mineral bodies, by which, under certain circumstances, they attract and repel one another according to determinate laws; the cause of the attractive power of the magnet; the science which investigates the phenomena and laws of the attractive power of the magnet, and other bodies in a magnetic state. MAGNETIZATION, n. *măg'nĕt-ī-zā'-shŭn*, the bringing into a magnetic condition; the state of the object so brought. MAGNETITE, n. *măg'nĕt-īt*, one of the richest and most important of the ores of iron, and that from which the finest kinds of steel are made—also called MAGNETIC IRON, or black oxide of iron (see LOADSTONE). MAGNETIC BATTERY, a combination of magnets with the like poles similarly disposed so as to act together with great power. MAGNETIC DIP: see DIP. MAGNETIC EQUATOR, the line around the equatorial parts of the earth where the dipping-needle rests horizontally. MAGNETIC FIELD, any region in space permeated by magnetism. A magnetized space. Commonly a magnetized air space. MAGNETIC FLUID, the hypothetical fluid to which the various phenomena of magnetism are usually referred. MAGNETIC FLUX, the magnetism or magnetic influence which permeates a magnetic field. This influence possesses at any point both intensity and direction. By reference to these properties the magnetic lines of influence may be conceived of as stream lines or lines of magnetic flow or flux, and may be expressed in terms of a unit named the *Maxwell*. MAGNETIC MERIDIAN, the mean direction which a freely suspended horizontal needle assumes when left to itself. MAGNETIC NEEDLE, the magnetized steel needle of the mariner's compass. MAGNETIC DIPPING NEEDLE, or INCLINATION COMPASS, an instrument for measuring the magnetic dip or inclination; that is, the angle which a magnetized needle, free to move in the plane of the magnetic meridian, and about a horizontal axis, makes with the horizontal plane at the place. A description of this needle will be found under DIPPING NEEDLE. See DECLINATION NEEDLE. MAGNETIC POLES,

the two points in the higher northern and southern regions where the needle dips and becomes vertical or perpendicular to the horizon—the north pole of the needle dipping in the north, and the south pole in the south. MAGNETIC TELEGRAPH, a telegraph worked by electro-magnetism. MAGNETO-ELECTRICITY, n. *măg-nĕt'ō-*, the electric phenomena produced by magnetism (see MAGNETISM, below). MAGNETO-ELECTRIC, a. pertaining to or exhibiting magneto-electricity. ANIMAL MAGNETISM, a supposed agent of a mysterious nature, which is said to have a powerful influence on a person through contact with an operator, or by the exertion of *will* on the part of another; mesmerism (see HYPNOTISM).

MAGNETIC BELTS: see ELECTRICITY, MEDICAL.

MAGNET'IC CURES: supposed by physicians of old to be wrought by the magnet, which, it was believed, exercised an important influence on the human body, or on the bodies of certain persons; as shown in the alleviation of headache, toothache, cramp, etc. It has, however, been proved that the magnet as such has no influence on animal organisms, and that accordingly all cures professedly resting on such action have been due to delusion or deceit. But it is quite otherwise with magneto-electricity and galvanism: see ECTLERICITY, MEDICAL.

MAGNETISM. *The Lodestone.*—There is a certain ore in nature termed by mineralogists magnetite and having the chemical composition denoted by the formula $Fe_3 O_4$, which possesses certain remarkable properties. If we take a long, thin piece of this ore, and plunge it into iron filings, fringes of the filings adhere to it in two places. If we suspend it, so that it can turn freely, as by placing it in a chair or saddle of paper hung by a fine thread, or by floating it on a cork, it sets itself with its ends, pointing nearly north and south. All these properties we imply when we call it a lodestone, or natural magnet. If we draw the part of the lodestone where the filings adhere, three or four times along a small hard steel bar, it communicates its properties to the bar. The lodestone gives the bar some power it had not before. We describe what we have done to the bar by saying we have magnetized it, or have imparted magnetism to it. Hence we have natural magnets like the lodestone, and artificial magnets like the steel bar. An artificial magnet, such as this bar magnet, possesses the same three properties as the lodestone: (1.) It attracts iron; (2.) When freely suspended, it sets in a particular direction; (3.) When we draw it along a piece of steel, it makes the steel a magnet.

The ends of the magnet are the points where the attraction for iron is the strongest and at the middle there is no attraction. The ability to attract iron grows in intensity, from zero at the middle of the magnet, to a maximum at either of its ends.

If a magnet be bent in the form of a horseshoe, either end will attract a piece of iron, but if the iron be made to

touch both ends at the same time, the attraction will be many times greater than double that of the pull of either end alone on the iron.

If two magnets be brought near each other, it will be found that they may attract each other when their two ends approach. If this is the case, and one of the magnets be reversed, so that its other end is brought near the unreversed end of the other magnet, it will be found that the two magnets now repel each other. Whether magnets attract or repel depends on whether the polarity of the neighboring ends are of an unlike or like character. Like poles repel and unlike poles attract each other. The

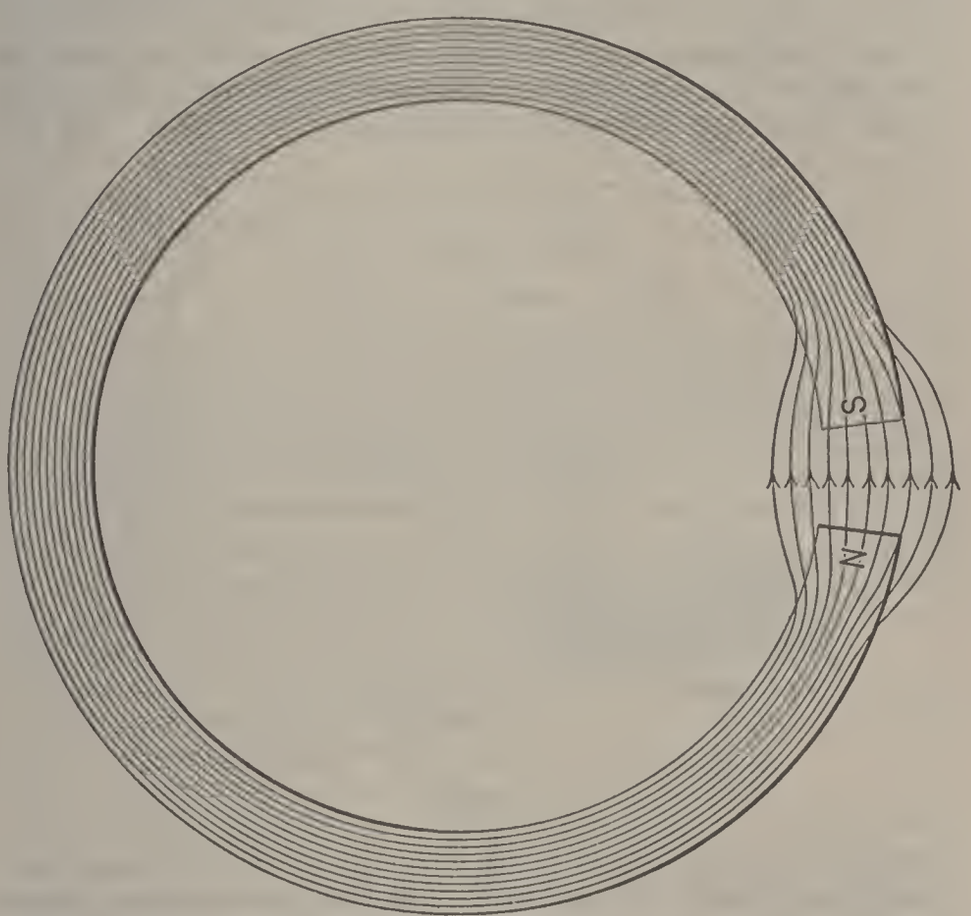


Fig. 1.

attraction between two magnets is directly proportional to the product of their respective pole strengths and inversely proportional to the square of the distance between them.

A piece of hard steel when magnetized, retains its magnetic condition for an indefinite period, and when suspended or pivoted so that it is free to swing in any direction, sets itself to point approximately north or south, for the reason that there exist magnetic poles on the earth, near the geographical north and south poles, towards which the poles of the magnetized bar are attracted.

If a piece of iron be attached to and held by a magnet,

it will be found that the piece of iron itself has become a magnet and will also attract other pieces of iron. This magnetization of attached iron and attraction of additional pieces, can be continued until the holding power of the original magnet is no longer equal to the weight of iron, suspended from it. When the iron falls away and no longer is in contact with (or very near to) the magnet, the pieces will have lost their magnetism and no longer attract each other. Hard steel, however, once magnetized retains its magnetic qualities.

The theory of the magnet is as follows:

When magnetism is present in any substance it exists by reason and virtue of a *flow of magnetic lines* through the substance. Thus in Fig. 1 is shown an iron ring which has a segment N S cut out of it. If this ring be magnetized, lines of force will pass round the ring in the iron, following the path of the lines as drawn. At the

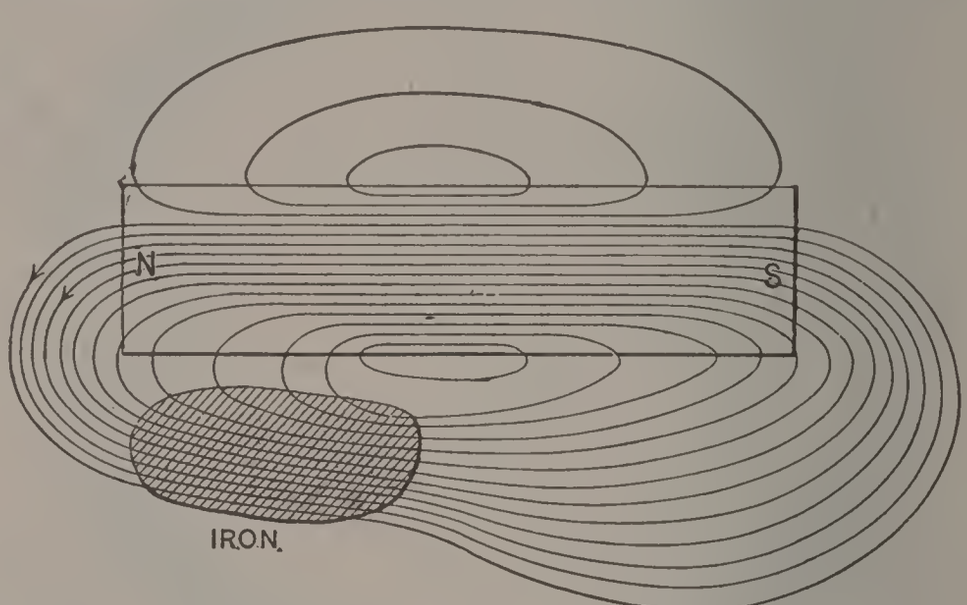


Fig. 2.

gap, they jump across from one end to the adjacent one, passing through the air and it is this passing out of the iron that makes one pole and passing into it again that makes the other. If the ring were continuous there would be no poles and no attraction for iron.

Air and all other substances except iron (and its alloys), nickel and cobalt, offer a high resistance to the passage of magnetic lines, and to this fact is attributable the attraction a magnet has for iron.

In Fig. 2 is shown the paths of the lines of force, in a bar magnet as diverted by a mass of iron. As may be seen, the number of lines of force is greater at the middle of the magnets, where there is no attraction for iron, than at the ends where this attraction is strongest. Lines of force will pass through the easiest path and when the lines are compelled to pass through air, copper or any substance other than iron, nickel or cobalt (which are the only good conductors of magnetism), they strongly tend

to contract and shorten themselves. Therefore, if a piece of iron be placed near a magnet, the lines of force will be diverted from their curved paths to the iron, and will in their effort to contract, draw it along until it touches the magnet poles, thus making a complete magnetic circuit of the lowest possible magnetic resistance.

The number of lines flowing in any magnetic circuit depends on the force causing them, and (inversely) on the resistance to their flow. Since the producing force is fixed and the resistance continually decreases, as a piece of iron approaches the poles, it is obvious that the lines must correspondingly increase.

This explains the rapid increase in the attraction of a magnet as the attracted iron approaches the poles. Also, a magnet will never attract iron, unless movement of the iron will shorten the length of the lines of the magnetic circuit. From this conception of magnetism it is manifest that no magnetic pole may exist without a corresponding opposite pole. The region through which the magnetic lines manifest themselves (that part of the circuit between the two poles) is called the *Magnetic Field.* The intensity of this field is determined by the number of lines of force per unit area of pole face. The direction of the lines is that in which a free north pole placed in the field would move. It is conveniently assumed that the lines *pass out of the north pole and re-enter the south pole* of any magnet. A north pole end of a second magnet, free to move and placed in the field would travel away from the north pole of the first magnet and towards the south pole, which is in accordance with the definition of direction of flow of the lines. *Lines of force always form closed rings* or loops, *and they can never intersect.*

A unit pole is one which has one line emanating from it, per square centimeter of area and this density to exist in air at one centimeter distance from the pole.

In order to get a conception of a unit pole it is assumed that a single pole is concentrated in a point and the lines emanate from this polar point to pass to the opposite pole, coming out in every direction. At one centimeter away from the point, the area surrounding the point is obviously that of a sphere of one centimeter radius. Since the area of a sphere $= 4\pi r^2$ and in this case $r = 1$, the area of the sphere encircling the point is 4π square centimeters. As a unit pole has one line per square centimeter of area at one centimeter distance, it follows that the *total* number of lines emanating from a unit pole $= 4\pi =$ 12.16 lines.

All this is a convenient mathematical fiction necessary for arriving at some method of computing magnetic effects. Obviously the hypothesis is an erroneous one as no magnetic pole can be a point, nor can a fractional part of a line exist.

The unit pole is also defined as one which repels a similar and equal pole with a force of one dyne ($= \frac{1}{981}$ gram or $\frac{1}{445000}$ lbs.) when the two poles are one centimeter apart.

For any two magnetic poles the force with which they are attracted or repelled is

$f = \frac{mm^1}{d^2}$ in which f = force in dynes; m and m^1 = pole strengths, in members of unit poles, d = distance apart of poles in cms.

Electro-magnetism.—We now come to the connection between magnetism and the electric current. No current can flow without the production of magnetism. The theory of flow of electricity is that magnetic lines surround a wire which carries current, whirling about it in a series of rings which are closer together near the wire and more widely separated as the distance (radially) from the wire increases. Fig. 3 depicts this condition. The encircling lines of force are termed the *magnetic*

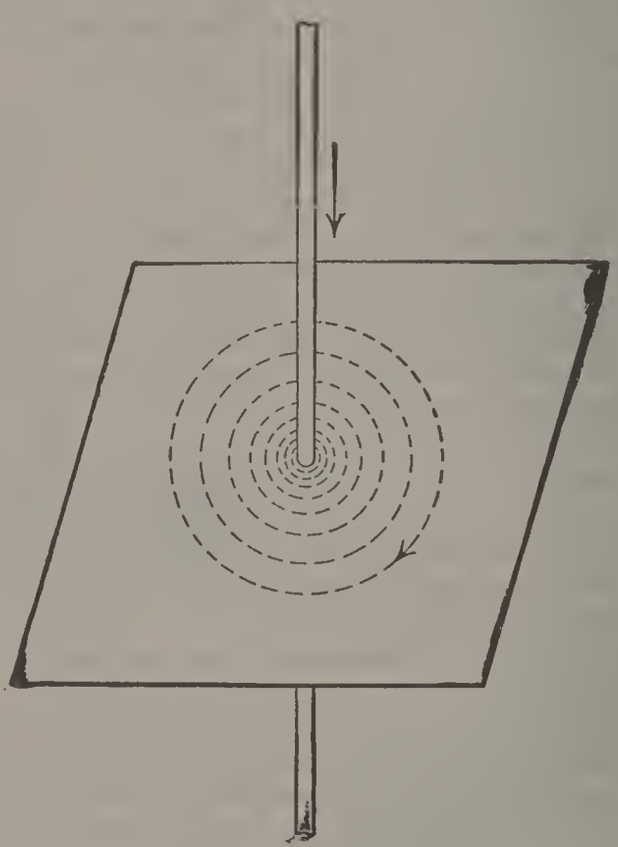


Fig. 3.

whirl. These lines flow in a given direction around a wire for a given direction of current through the wire. An easy rule to remember the direction of the lines is as follows:—

Conceive a wire passing through the centre of a watch from the face to the back, the wire being perpendicular to the face of the watch. If current flows in the wire from the face to the back of the watch, the magnetic whirl is in the same direction as that in which the hands of the watch travel. If the direction of current flow is reversed, the direction of the magnetic whirl is also reversed.

If a bar of iron be wound with a number of turns of

wire and an electric current passed through this coil, the iron will become highly magnetized, and will behave like a strong magnet as long as the current continues to flow.

When a piece of iron is magnetized, the lines pass with comparative ease through the iron itself, but if part of the circuit is through air, there is considerable opposition to the passage of the lines. Thus, the magnetic resistance, termed the *reluctance*, is made up of the iron part and the air part of the path. The magnetizing action of the current is termed the *magncto-motive force*. The unit of magneto-motive force is the *ampere-turn* which is equal to one ampere flowing through a coil of one turn or a single convolution. Ten ampere-turns may be 10 amperes in a coil of one turn, or one ampere through a coil of 10 turns, or $2\frac{1}{2}$ amperes through a coil of 4 turns. The ampere-turn is a compound quantity, and the number of ampere-turns in any coil is the product of number of turns in the coil, multiplied by the amperes flowing through it.

A given number of ampere-turns produce a certain magneto-motive force. The number of magnetic lines that will be produced, or the *magnetic flux*, for a specified producing force depends on the magnetic resistance or *reluctance* of the magnetic circuit. The greatest number will flow if the circuit be of iron and made as short as possible. A less number will flow with a longer iron circuit and a greatly diminished number will flow if part of the circuit be through air.

The reluctance of iron increases as the number of lines through it increase, and therefore doubling the ampere-turns will not produce double the number of lines in iron. As the lines increase, a point is finally reached at which a large increase in ampere-turns will produce only a feeble increase in the flux, and this condition is called magnetic *saturation*. The flux through other materials such as air, copper, gold, lead, water, etc., changes in exact proportion with the ampere-turns.

Flux density is defined as the number of lines per square inch (or square centimeter). One ampere-turn will produce a flux density through air or other non-magnetic substance, of 1.256 lines per square centimeter, if the length of the magnetic circuit be one centimeter. If the length of the circuit be $\frac{1}{2}$ centimeter, the density will be $\frac{1.256}{1\text{-}2}$ $=2.512$ lines per square cm., and for 1000 ampere-turns, the number of lines would be 2512 per square cm. Therefore, the lines through air per sq. cm. $=\frac{At \times 1.256}{L}$ in which

At = ampere-turns.

L = length of circuit in centimeters.

The ability to carry magnetism or the magnetic conductivity is called *permeability* and that of air is taken as the unit or $=1$.

The permeability of iron is many times that of air, being as high as 2500 for low densities and dropping gradually down to 300 as magnetic saturation is approached. Calling m the permeability of the iron for the given density it will attain and L its length (in cms.) the number of lines per sq. cm. flowing in an iron circuit will be $N = \frac{At \times 1.256 \times m}{L}$ and the *total* number of lines flowing will be $N \times S$ where S = area of the cross section of the circuit in sq. cms.

If the circuit is made up of both iron and air, the separate reluctances must be computed and added together to obtain the total reluctance of the circuit.

If the length of iron be 12 cms. and that of air be 2 cms., and assuming that the density will be such that the permeability of the iron is 800, the reluctances will be = $\frac{Length}{Permeability.}$

$Iron = \frac{12}{800} = 0.015.$

$Air = \frac{2}{1} = 2.00.$

Total 2.015. Consequently the lines per ampere-turn will be $\frac{1.256}{2.015}$

The ampere turns required to produce a given number of lines, N, per sq. cm. area:—

$Ats = \frac{R\,N}{1.256}$ in which R = total reluctance of the circuit.

The permeability of soft annealed iron is the highest of any known substance, as is also the density attained before saturation is reached. Soft steel is next highest, and cast iron is much lower in the scale than either of these. Nickel and cobalt are far down the scale, cobalt being about $\frac{2}{3}$ and nickel $\frac{1}{3}$ that of iron. All other substances have a permeability the same as that of air, except a few, such as phosphorus, bismuth, zinc, antimony, which offer a still higher reluctance than air. These latter are called *diamagnetic*, while iron, nickel and cobalt are called *paramagnetic* substances.

The pull exerted by an electro-magnet on a piece of iron is

$P = \frac{B^2 A}{11183000}$ in which

P = Pull in pounds avoirdupois.
B = Number of lines per sq. cm.
A = Area in sq. cms. of both poles.

or

$P = \frac{B^2 A}{72130000}$ in which

P = Pull in lbs. avoirdupois.
B = No. of lines per sq. inch.

A = Area of both poles in sq. inches.

If a piece of iron be magnetized by the electric current and the current flow stopped, the iron loses its magnetism *almost* entirely, but a slight trace of it still remains. If it now be magnetized in the opposite direction, by reversal of current in the magnetizing coil, it will be found that a small amount of reverse current will be necessary to completely demagnetize the iron and bring its actual magnetic density to zero. When iron is surrounded by a coil, in which rapidly reversing or alternating currents flow, this property of the iron requires energy to magnetize, demagnetize and magnetize in the opposite direction, with continuous repetitions of the procedure. This energy goes into heat and raises the temperature of the iron and is therefore lost by radiation. This energy loss is called *hysteresis*, and the tendency of the iron to retain some magnetism after once being magnetized is called *retentivity*. Obviously the greater the retentivity the greater is the hysteresis.

When an iron bar is magnetized, by the electric current the direction of magnetization is fixed by the direction

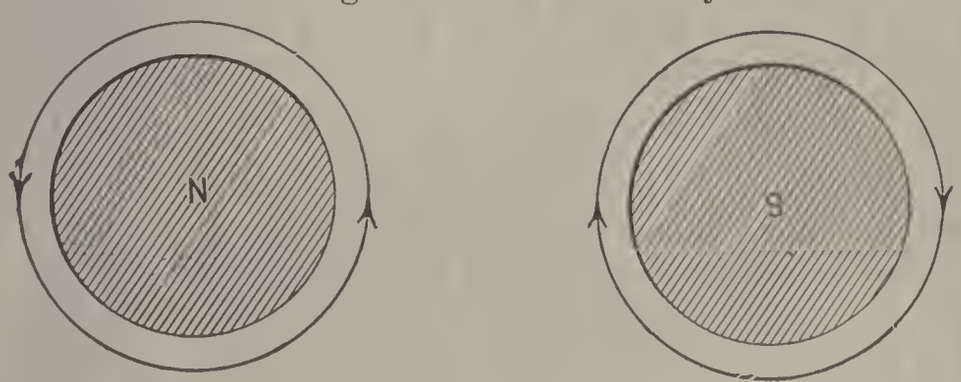


Fig. 4.

of current flow. Fig. 4 shows the polarity of the ends of magnets with different directions of current flow. It is easy to remember the polarity if the following rule is kept in mind: If when looking at the end of a magnetized bar, the current circulates around the bar in the same direction as the hands of a watch turn, the end viewed is a south pole. If the current flow is in an opposite direction to the movement of the hands of a watch, the end is a north pole. See DECLINATION NEEDLE; DIAMAGNETISM; DIPPING-NEEDLE; ELECTRICAL MACHINES; ELECTRICITY; ELECTRICITY, PRINCIPLES OF. Consult Crapper, *Electric and Magnetic Circuits* (1903); Du Bois, *The Magnetic Circuit in Theory and Practice* (1894); Ewing, *Magnetic Induction in Iron and Other Metals* (1892); Gilbert, *The Loadstone and Magnetic Bodies*, reprint (1900); Kelvin, *Reprint of Papers on Electricity and Magnetism* (1892); Lodge, *Modern Views of Electricity* (1889); Lyons, *A Treatise on Electro-Magnetic Phenomena* (1903); *Von Helmholtz, Wissenschaftliche Abhandlungen* (1882); also numerous text-books on physics, electricity, electrical machinery, etc.

MAGNETISM, ANIMAL: see HYPNOTISM.

MAGNETISM, TERRESTRIAL: magnetic properties of the earth as a whole. The globe itself is a magnet: see MAGNETISM. In studying the magnetic field associated with the earth we are confined to its surface, and are unable to trace the lines of force throughout their whole

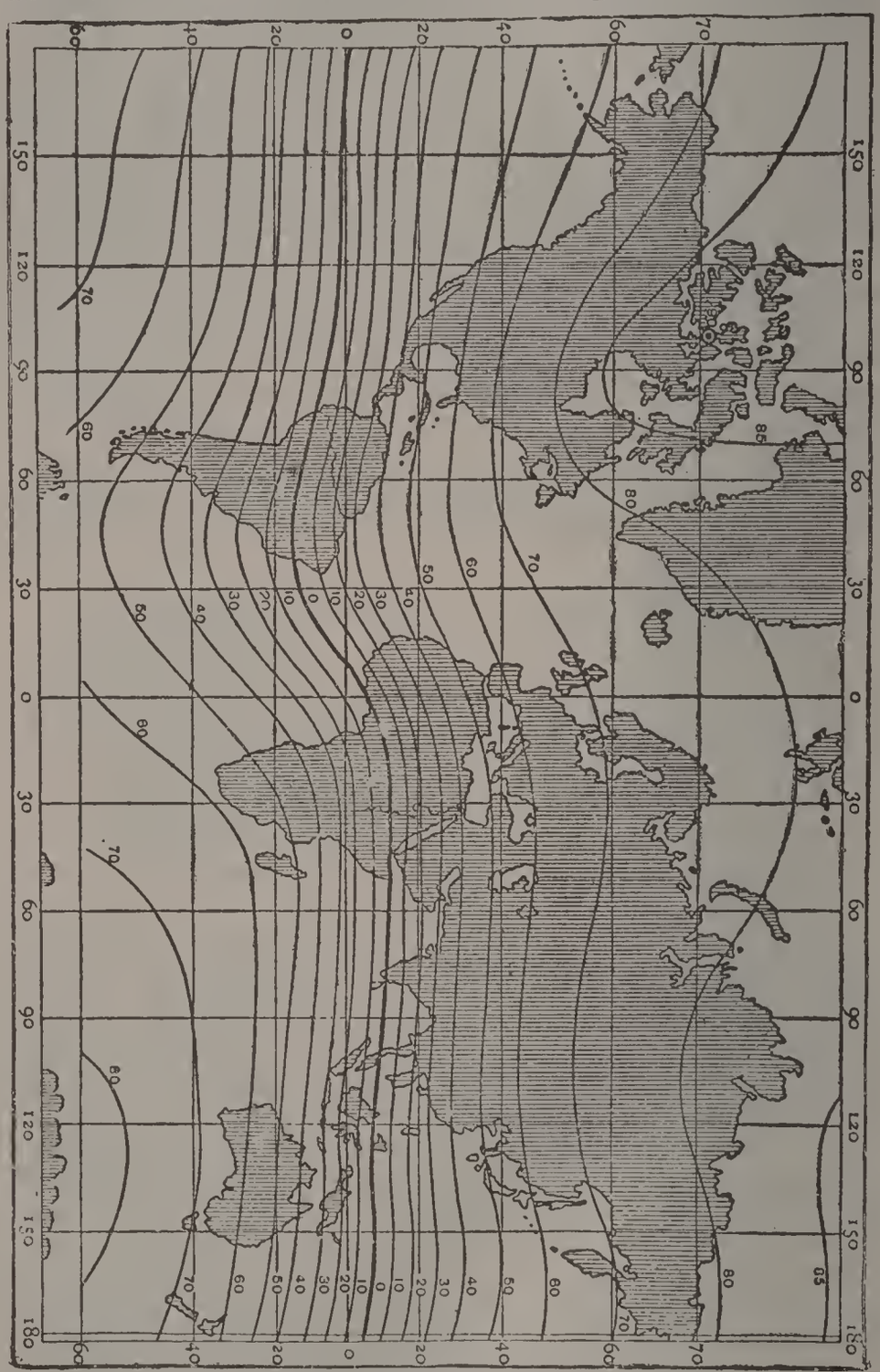


Fig. 1.—Lines of Equal Magnetic Dip, 1885.

length. We believe, however, that these lines of force have the properties of all lines of force associated with magnets. In general they pass by continuously curved paths from regions in the southern hemisphere to regions in the northern hemisphere. The southern hemisphere, therefore, is the seat of what is called northern or positive magnetism.

The direction of the line of force at any point is given by the direction in which a perfectly free magnet placed there will point (see MAGNETISM). To obtain the direction of the earth's magnetic force we must suspend the magnet accurately by its centre of mass, as in the apparatus known as the Dipping-needle (q.v.). With such an apparatus, let us, beginning at the extreme s. point of Africa, move northward, and study at each successive stage the behavior of the magnet. At first it will be found to make an angle of about 57° with the horizontal, pointing up toward the northwest. This angle of 57° is called the dip, and will steadily diminish as we pass northward, until, a little s.e of Lake Chad, the magnet will be found to rest perfectly horizontal. Proceeding still northward we shall find the magnet beginning to tilt again, but this time with the north-pointing end downward. As we leave the n. coast of Africa in 20° e. long. the dip will be nearly 45°; it will be 55° as we enter Turkey, gradually increasing to nearly 77° as we leave the n. coast of Norway. Very similar changes in dip will occur as we pass along any longitude line. The general features are shown in fig. 1, reduced from Neumayer's chart for 1885, as given in the new edition of Berghaus's *Physikalischer Atlas*. Each line is drawn through all places at which the dip has the value indicated by the number attached. The only points requiring particular remark are the position of the line of zero dip, and the position of the point of maximum dip. The line of zero dip is called the magnetic equator. Its non-coincidence with the geographical equator indicates a marked departure of the earth's magnetic condition from the magnetic condition of a uniformly magnetized sphere, whose magnetic axis coincides with the polar axis. The position of maximum dip shown is where the needle points vertical with its north end downward. It is called the magnetic n. pole, and is situated in the n. of Canada, 97° w. long., 70½° n. lat. There is also a magnetic s. pole, believed to lie somewhere near 150° e. long. and 73° s. lat. The magnetic poles do not, therefore, lie exactly at the extremities of a diameter. It should be noted that the dip is the angle between the line of force at a given locality and the horizontal plane there; that is, the dips in different latitudes are referred to different planes. Fig. 2, which represents the section of the earth along the great circle passing through the geographical and magnetic n. poles, will serve to indicate the approximately relative positions of the lines of force. The directions of these at latitudes 0°, 30°, and 60° are indicated

Fig. 2.

by arrows, the dotted lines giving the directions of the true vertical at the various points. AB is the geographical polar axis, S the 'magnetic north pole'—really analogous to the so-called s. pole of a magnet. OO′ are the points of zero dip, where the lines of force will be roughly parallel to the magnetic axis.

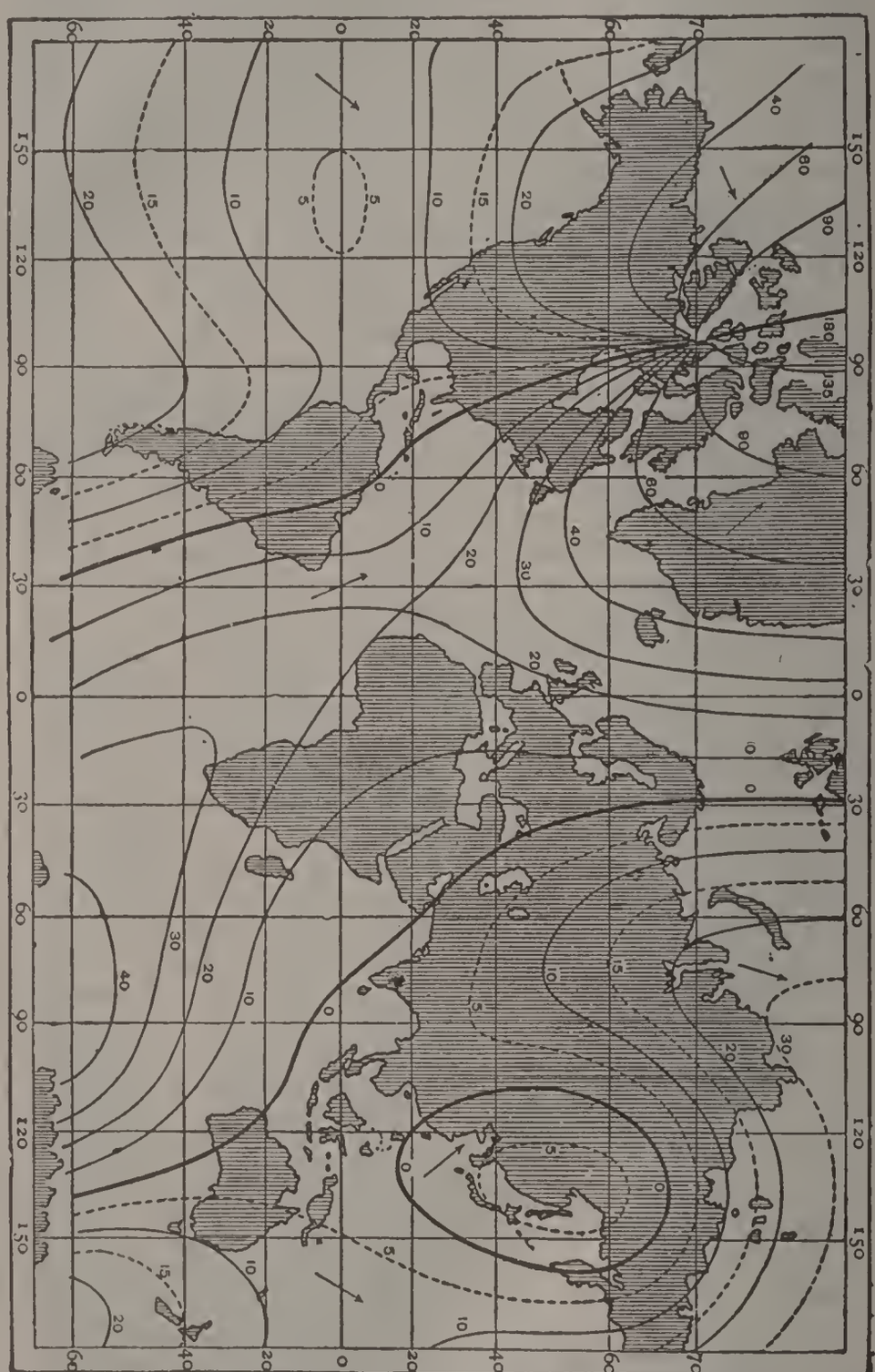


Fig. 3.—Lines of Equal Magnetic Declination, 1885.

Returning again to the southern extremity of Africa, let us consider more fully the position of the magnet hanging freely by its centre of mass. To fix this position we require

to know not only the dip but also the geographical lie of the vertical plane in which the magnet hangs. This is given by the Declination (q.v.), which may be defined as the angle between the meridian plane and the vertical plane parallel to the magnetic axis of the free-hanging magnet. Practically this angle is determined by a magnet suspended or pivoted so as to lie horizontally, and is what every mariner's compass gives more or less accurately. Near Cape Town the declination is fully 30° west of north (NNW¾W.); but as we pass northward it gradually diminishes, until on the Mediterranean shore in 20° long. it becomes only 8° west of north (N¾W.). Passing farther north we find it still diminishing, but more slowly, until finally, as we leave the north coast of Norway in the same longitude, it is found to be 6° (N½W.). The general features of the declination are shown in fig. 3. Each isogone or line of equal declination passes through localities at which the declination had the value as marked in 1885. This figure is also reduced from Neumayer's chart. It will be seen at a glance that the surface of the globe is divided broadly into two regions, separated by the agonic lines (marked thick) or lines of no declination. The one region, including the Atlantic with the whole of Africa and a large part of the Indian Ocean, is characterized by a westerly declination; and the other (with an interesting exception) an easterly declination. These are indicated by arrow-heads appropriately directed. The western boundary of the region of westerly declination passes through the magnetic north pole. This line passes through the localities where the magnet points true geographical north. It continues itself northward toward the geographical pole as the isogone of 180°, since any magnet, set between the magnetic pole and the geographical pole, will turn its marked end toward the south instead of toward the north. The eastern boundary of western declination passes northward from Europe till, at the geographical north pole, it meets the short isogone of 180° just mentioned. After its south-easterly sweep across the Indian Ocean this line of zero declination passes through the western portion of Australia, and finally ends at the 'magnetic south pole.' Continuing as the isogone of 180° till it reaches the geographical south pole, it joins with the other boundary line of zero declination. It will be readily seen that the region of western declination is more contracted than the other; but, as if to balance this, there is an isolated region of western declination situated in the midst of the region of eastern declination. This isolated region lies on the east of Asia, and is inclosed in an oval-shaped agonic line (marked with a thick line in the chart). Declination charts for all seas and shores are invaluable to the practical navigator, by whom they are called variation charts. From them he learns at a glance in what direction the magnetic needle points at the place he happens to be in, and can steer his desired course accordingly. For example, in a voyage from England to India by way of Suez, the western declination diminishes rapidly from 17° at Gibraltar to 5° at Suez. Before India is sighted the

agonic line is crossed, and the declination becomes slightly easterly. Thereafter, on as far as Hong-kong or Torres Strait, the compass points never so much as half a point to the east of north. Hong-kong is just outside the small isolated region of westerly declination, through which the

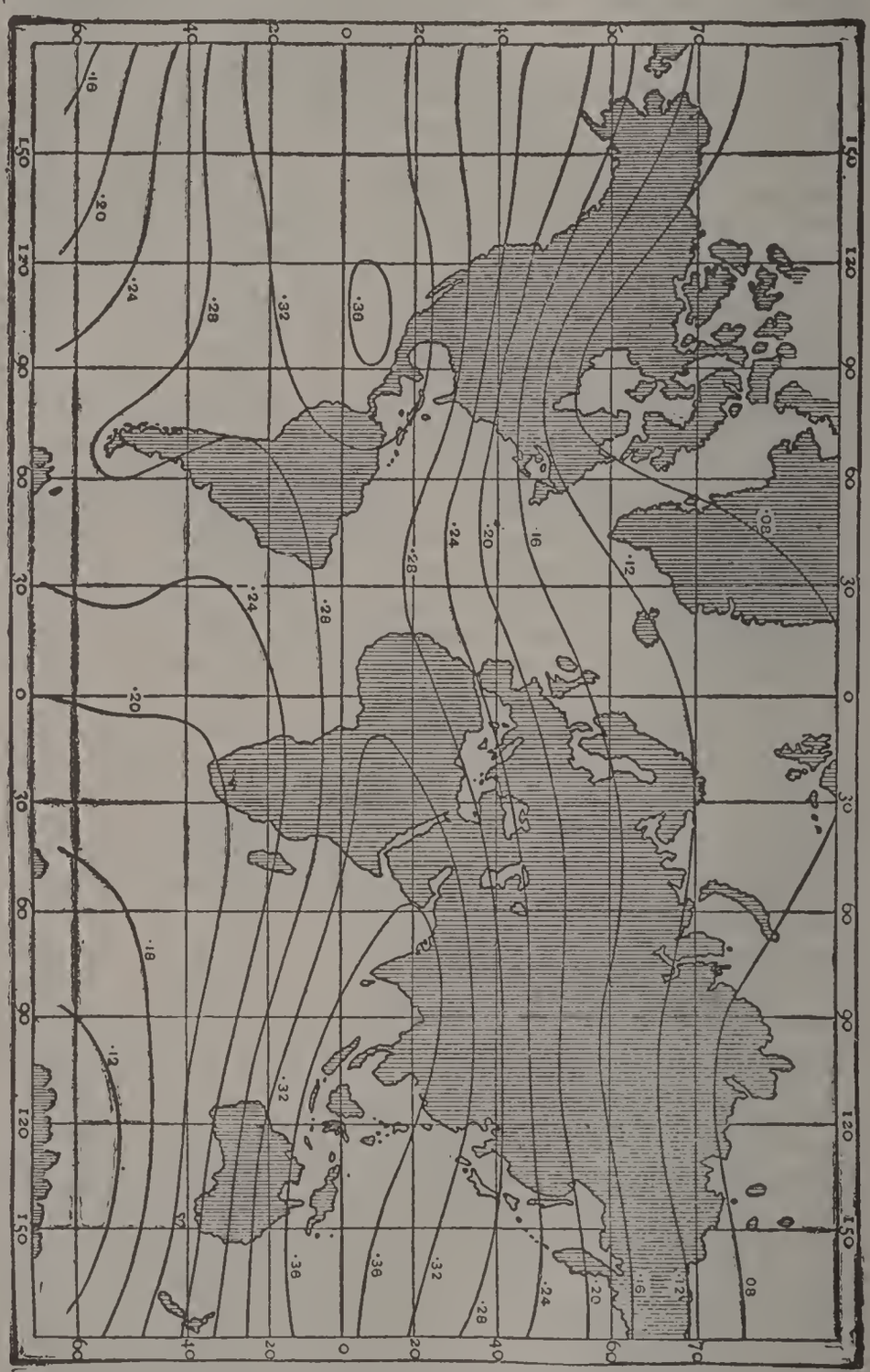


Fig. 4.—Lines of Equal Horizontal Force, 1885.

route to Vancouver passes. As Vancouver is approached, however, the easterly declination rapidly increases to nearly 25°.

The declination and dip completely determine the direction of the line of force. Its strength or intensity still

requires to be known before the magnetic conditions are completely fixed. The total force we may imagine to be determined by measuring the time of oscillation of a dipping-needle of known magnetic moment. Practically, however, it is easier and much more accurate to measure the horizontal component of the total force or intensity of the field. It is consequently more useful to construct a chart showing lines of equal 'Horizontal Force.' Such a chart is shown in fig. 4 (also from Neumayer's chart) each line being drawn through localities at which the horizontal force has the value as marked. The horizontal force must, of course, vanish at the magnetic poles, which we originally defined as the regions where the dip was 90°. From figs. 1 and 4 taken together we may calculate roughly the total magnetic force at any locality, by multiplying the horizontal component by the secant of the angle of dip. Thus, for Edinburgh we have, roughly, $0{\cdot}165 \times 3 = 0{\cdot}49$; in Hudson Bay, $0{\cdot}08 \times 9{\cdot}5 = 0{\cdot}76$; in central Africa, where the magnetic equator cuts the 20° longitude line, $0{\cdot}33 \times 1 = 0{\cdot}33$. The total force, therefore, increases in a general way as we approach the magnetic poles. Its maximum values, however, are not exactly at these poles, nor do the positions of minimum value lie on the line of dip.

The declination, dip, and horizontal force are commonly called the magnetic elements. They all are subject to variations in time, so that magnetic charts for one epoch will differ somewhat from those for another epoch. For example, comparing the isogonic lines given in fig. 3 with the isogonic lines for 1840, we see that both the long agonic lines have, for the greater part of their lengths, moved westward, and the agonic oval has changed form slightly and moved a little eastward. A line drawn from Nova Scotia to the Cape of Good Hope divides the Atlantic into two regions. In the northeastern region the declination has been diminishing during the last twenty years, while in the southwestern the declination has been increasing. There is some evidence of a periodic variation extending over several centuries. Thus, in 1600 the agonic passed to the *west* of England and through the Cape of Good Hope, the declination in England being about 8° *east* of north. In 1700 the *westerly* declination in England had become 6° or 7°, and that at the Cape about 12°. In 1800 the declinations had increased to 23° or 24° at the two places. All this indicates an eastward motion of the line of zero declination. Since 1818 the westerly declination in England and in western Europe generally has been slowly diminishing, showing that the agonic line had ceased its easterly and begun its present westerly drift. In the charts published by the U. S. Coast and Geodetic Survey very full information is given regarding the westerly drift of the agonic line that passes through America. S. of the Great Lakes its average rate of progress during the last 40 years has been nearly five m. per annum. In 1890 the annual change of declination at places in the neighborhood of the agonic line was about three minutes of arc, westerly increase. At Greenwich, England, the present annual change

is about seven minutes of arc, westerly decrease. The secular changes in the dip and horizontal force are very slight, and generally take place in opposite directions, so that the change in the total intensity is still smaller.

The solar diurnal variation of the magnetic elements, and especially of the declination, is most easily recognized of all the periodic variations to which the earth's magnetism is subject. In all but tropical regions the declination needle oscillates markedly about its mean position for the day, attaining its maximum deviation one to two hours after noon. In the n. hemisphere this maximum deviation is to the w. of the mean position; in the s. hemisphere it is to the e. Again, the total range of variation is greater in the summer months than in the winter months. By an elegant development of Gauss's flawless theory of terrestrial magnetism Schuster has shown that the features of the solar diurnal variations of the different magnetic elements indicate causes above the earth's surface as the source of these variations. This accords with Balfour Stewart's hypothesis that the diurnal magnetic changes result from electric currents in the higher regions of the atmosphere. These currents are due to the action of the sun, and are probably associated with the currents of hot air which pass from the equatorial regions both northward and southward. That such electric currents do exist is demonstrated by the existence of the aurora in higher latitudes. Further, distinct connection has been traced between auroral displays and magnetic disturbances of exceptional character (see AURORA BOREALIS). These irregular magnetic disturbances or magnetic storms, as they are called, are more frequent and more pronounced at times of maximum sun-spots; and, according to Loomis, a great magnetic storm is always accompanied by an unusual disturbance on the sun's surface. Again, there is no doubt some connection between certain types of magnetic changes and earth-currents, the latter being particularly strong during magnetic storms; but it is now admitted by all authorities that earth-currents cannot be regarded as an efficient cause of the magnetic disturbances.

In addition to the well-marked solar-diurnal variation of the magnetic elements, there is also a lunar-diurnal variation, which has been specially studied by Broun and Chambers. These and other phenomena of terrestrial magnetism show that the earth is magnetically sensitive to cosmic influences. These influences may be directly magnetic; or, as is more probable in the case of the solar-diurnal variations, they may give rise to meteorological changes involving electric and magnetic actions. As to the ultimate origin of the earth's magnetism as a whole it is not possible, at present, to formulate any satisfactory hypothesis. The rotation of the earth, so important a factor in the broad meteorological features that exist over the earth's surface, is the only dynamic polarity that can be compared to the magnetic polarity. According to the nebular hypothesis, the earth's rotation is a part of a grand circulatory motion of the solar system. So may the earth's mag-

netism be a part of the general magnetic conditions of the same system. If such a view is too vague for acceptation, the only hypothesis which seems to meet the case is that suggested by Balfour Stewart, who traces the magnetic condition of the earth to the terrestrial meteorological system, as modified by the earth's rotation, acting cumulatively through the ages.

MAGNETITE, or MAGNETIC IRON ORE: native magnetic oxide of iron, Fe_3O_4. It sometimes has part of its iron replaced by titanium or magnesium, and occasionally by nickel. It is very abundant (the production of the United States in 1901 being 1,813,076 tons), and when pure it constitutes a valuable ore of iron, 72 per cent. of its weight consisting of that metal. Magnetite crystallizes in the isometric system, commonly in octahedra, but also in dodecahedra, with striated faces. It also occurs, and very generally, in massive and granular forms. It is black in color, with a metallic or sub-metallic lustre. It is brittle, and has a hardness of from 5.5 to 6.5; the crystals having a specific gravity of about 5.17. It may be readily distinguished by the fact that it is strongly magnetic. Specimens are found which manifest quite a strong, permanent magnetic polarity, this variety of the mineral being known as 'lodestone.' Magnetite occurs in vast beds in Canada, and in the northern and eastern parts of the United States. Abundant deposits of it are also known in California and Washington.

MAGNETO: a small alternating-current dynamo, operated usually by hand, and used for testing, for faults, for ringing telephone bells and like service.

MAGNETO-ELECTRIC MACHINE. See DYNAMO-ELECTRIC MACHINE.

MAGNETOM'ETER: in general, any instrument for measuring magnetic force, or for comparing one magnetic force with another. A freely-suspended magnet, whereby the strength and direction of the lines of force in a magnetic field may be ascertained by observing the position assumed by a freely-suspended magnet and also its rate of oscillation and the amount to which it is deflected when under the influence of a second magnet, is the essential feature of all magnetometric instruments. The peculiar importance to us of the earth's magnetic field has, however, led to the construction of instruments of precision, to which the name is specially applied. In a magnetic observatory the self-registering magnetometers or magnetographs form an extremely important set of instruments. By these the quick changes in the intensity of the earth's magnetic field and in the declination are registered by photographic means. The essential feature of the method is the reflection of a beam of light from a mirror attached to a magnet, which is suspended or pivoted so as to be sensitive to changes in the element being measured.

MAGNETO-MOTIVE FORCE. See MAGNETISM.

MAGNETOMOTOR, n. *măg'nĕt-ō-mō'tėr* [Gr. *magnes*, the loadstone; L. *motor*, a mover]: a voltaic series of two or more large plates, which produces a great quantity of electricity of low tension, adapted for electro-magnetic purposes.

MAGNIFICAT, *măg-nĭf'ĭ-kăt:* a musical composition in the evening service of the Roman Catholic Church, also of the Lutheran and English churches. The words are taken from Luke i. 46-55, containing the 'Song of the Virgin Mary,' which, in the Vulgate, begins with *Magnificat*. In the Roman Catholic Church the Magnificat is a grand hymn, powerful in melody and harmony, mixed with pompous fugues, and with full instrumentation. In modern times, there have been few attempts in the Roman Catholic service to supersede the older music of the Magnificat (by Palestrina); but in the service of the Church of England, and of the Protestant Episcopal Church in the United States, where the music is of less elevated character, new compositions are frequently written for the Magnificat, by composers strictly of the English school.

MAGNIFICENT, a. *măg-nĭf'ĭ-sĕnt* [L. *magnif'icens* or *magnificen'tem*, doing great things, magnificent—from L. *magnus*, great; *facĭō*, I make]: grand in appearance; pompous; fond of splendor; having the quality of grandeur or excellence. MAGNIF'ICENTLY, ad. *-lĭ*. MAGNIF'ICENCE, n. *-ĭ-sĕns* [F.—L.]: grandeur of appearance; splendor. MAGNIF'ICO, n. *-ĭ-kō* [It.]: a grandee or noble of Venice. MAGNIFY, v. *măg'nĭ-fī* [L. *fīo*, I am made]: to increase the apparent size of a body; to praise or extol highly; to exaggerate; to amplify; to raise in pride or pretensions. MAG'NIFYING, imp.: ADJ. enlarging apparent size; extolling. MAG'NIFIED, pp. *-fīd*. MAG'NIFIER, n. *fī-ėr*, one who magnifies; a glass or lens which increases the magnitude of a body to the eye. MAGNIFYING GLASS: see MICROSCOPE. MAG'NIFI'ABLE, a. *-fī'ă-bl*, that may be magnified. MAGNIFICAT, n. *măg-nĭf'ĭ-kăt* [L. *magnĭfĭcat*, magnifies, extols]: the inspired Hymn of the Blessed Virgin Mary (Luke i. 46-55), so named from the initial word in the Latin Vulgate.—SYN. of 'magnificent': grand; great; sublime; majestic; noble; imposing; stately; splendid; august; superb;—of 'magnify': to exalt; extol; praise; augment; enlarge.

MAGNILOQUENT, a. *măg-nĭl'ō-kwĕnt* [L. *magnus*, great; *loquens* or *loquen'tem*, speaking]: pompous in words or style; expressing lofty pretensions. MAGNIL'OQUENCE, n. *-kwĕns*, a lofty inflated manner of speaking. MAGNIL'OQUENTLY, ad. *-lĭ*.

MAGNITUDE, n. *măg'nĭ-tūd* [L. *magnitu'dĭnem*, greatness—from *magnus*, great: It. *magnitudine*]: bulk; size; extent of dimensions or parts; greatness; importance.

MAGNOLIA, *măg-nō'lĭ-a:* seaside resort on Cape Ann in Massachusetts, on the point w. of the entrance to Gloucester Harbor, about 25 m. in a straight line n.e. of Boston. It is 4 m. from the centre of Gloucester, being partly in that town, partly in Manchester. It combines charming woodland drives with impressive cliffs on a bold ocean shore. It has good hotels and many fine cottages. It is connected with Boston by the Boston & Maine Railroad.

MAGNOLIA: genus of beautiful trees, typical genus of the nat. ord. *Magnoliaceæ*, having a calyx of three sepals, a corolla of 6-12 petals, and carpels in spikes arranged in cones, and opening at the dorsal suture. There are about 14 species, natives chiefly of N. America, the Himalaya Mountains, China, and Japan. The flowers are large and solitary, the leaves large. The wood is in general soft, spongy, and of little value. *M. grandiflora,* sometimes called the Big Laurel, has white flowers sometimes 12 in. in diameter. It is a lofty and magnificent evergreen tree, conspicuous at a great distance, found in the southern United States from North Carolina to the Gulf of Mexico. It thrives as an ornamental tree in southern England, but in Scotland requires a wall and some protection in winter.—*M. tripetala* is found on the Alleghany Mountains, and extends as far n. as lat. 43°. From the radiated manner in which its leaves are disposed at the extremities of the branches, it has received the name of Umbrella Tree. It has very large white flowers. It is one of the species most frequently cultivated in Britain.—*M. acuminata* inhabits the same district, and is a lofty tree with greenish-yellow flowers, not so much admired as those of some of its congeners.—*M. glauca,* native of Pennsylvania, Virginia, and the Carolinas, is known by the names of White Bay, Beaverwood, and Swamp Sassafras. It is a tree or shrub, 15-20 ft. in height, with very beautiful and fragrant white flowers: its bark is used as a substitute for Peruvian Bark.—The Yulan, or Chinese magnolia (*M. Yulan* or *conspicua*), has been much cultivated in China for more than 1,200 years, on account of its great profusion of beautiful and fragrant white flowers. It is one of the finest ornamental trees, and thrives in southern England. It is a deciduous tree, and the flowers expand before the development of the leaves.—*M. excelsa,* one of the finest species known, is a predominant tree in parts of the Himalaya Mountains, at an elevation of 7,000-8,000 ft., the mountains when it is in blossom appearing as sprinkled with snow.—*M. Campbellii,* another native of the same region, produces great rose-colored flowers, and is described by Dr. Hooker as the most superb of the genus.—Allied to the genus *M.* is *Michelia,* some of the species of which are among the most valuable timber trees of Nepaul, and very ornamental. The bark of some is used medicinally, and the fragrant flowers of a species

called Champac are the delight of the people of Hindustan. *Manglietia* is another closely allied genus, to which belong valuable timber trees of Nepaul and of the Indian islands.—The nat. ord. *Magnoliaceæ* is closely allied to *Ranunculaceæ*, differing chiefly in the arborescent habit, and in the large stipules which envelop the young leaves before they open, but soon fall off. The leaves are simple. Aromatic properties are prevalent. To this order belong the *Tulip Tree*, *Star Anise*, and *Winter's Bark*.

MAGNOLIACEÆ, n. *măg-nō'lĭ-ā'sē-ē* [after Pierre *Magnol*, professor of medicine at Montpellier, France—died 1715]: the Magnolia family, an order of splendid trees and shrubs, bearing large showy flowers with fine glossy leaves, and possessing bitter, tonic, and often aromatic properties. MAGNOLIA, n. *măg-nō'lĭ-ă*, genus of trees (see above).

MAGNUM, n. *măg'nŭm* [L. *magnus* or *magnum*, great]: a large wine bottle, which holds double the quantity of an ordinary one. MAGNUM BONUM, *bō'nŭm* [L. *magnum*, great; *bonum*, good]: a plum so called; an epithet denoting excellence in the highest degree. MAGNUM OPUS, *lit.*, a great work.

MAGNUSSEN, *mâg'nûs-ėn*, FINN: Scandinavian scholar and archæologist: 1781—1847; b. Skabholt, in Iceland, where his family, both on his mother's and on his father's side, had for generations been distinguished for learning and integrity. In 1797, Magnussen entered the University of Copenhagen to study law. After practicing this profession some years in Iceland, he returned 1812 to Copenhagen, and applied himself to his favorite archæological studies. In 1815 he obtained a chair of literature in the university. Among his earlier noteworthy works are his papers on the *Aboriginal Home and Earliest Migrations of the Caucasian Races* (1818); contributions to northern archæology (1820); the indices, glossaries, and lexicon which he compiled for the elucidation of the 2d and 3d of the Arne-Magnussen editions of the Eddas (1818 and 1828); comprehensive translation of the Elder Edda (*Aldre Edda, oversat og forklaret*, Kopen. 1824); and exposition of the same work (*Edda læren og dens Opfindelse*, Kop. 1824). Among his later works, *Runamo og Runerne* (Kop. 1841) has given rise to angry discussion; and although many of his interpretations of assumed runes have been proved untenable, his learning and acumen have thrown great light on this branch of archæology, in regard both to N. American and to ancient northern remains. In conjunction with Rafn, Magnussen elucidated the history and antiquities of Greenland in an able work (*Grönland's Historiske Mindesmerker*, Kop. 1838-42); and he subsequently prosecuted a similar course of inquiry in regard to Russia in *Antiquités Russes* (Cop. 1850-52). Magnussen annotated nearly all the most important remains of old northern

literature. During his latter years, Magnussen sat in the Danish landthing as deputy for Iceland and the Faröe Isles. At his death he held the office of *Geheimarchivar* in the Royal Chamber of Archives.

MAGO, *mā'gō:* common Carthaginian name; appearing in history as applied to no less than 14 different persons; of whom the most distinguished is Mago, son of Hamilcar Barca (q.v.) and a younger brother of Hannibal (q.v.) and Hasdrubal (q.v.).

MAGOFFIN, *ma-gŏf'ĭn*, BERIAH: American statesman: b. Harrodsburg, Ky., 1815; Apr. 18; d. there 1885, Feb. 28. He was graduated from Centre College (Danville, Ky.) in 1835, from the law school of Transylvania University (Lexington, Ky.) in 1838, entered the practice of law at Jackson, Miss., in 1839, but in the same year returned to Harrodsburg. In 1840 he became police judge, in 1848, 1856, and 1860 was a delegate to the Democratic national conventions, in 1850 was elected to the state senate of Kentucky, and in 1859-62 was governor of Kentucky. He refused, 1861, Apr. 15, to comply with Lincoln's call for 75,000 troops; in 1861, May, by proclamation warned both the Confederate and Federal governments against occupying Kentucky soil, and the citizens of the state against entering hostilities; and in August requested Lincoln to withdraw United States troops. He vetoed a resolution of the legislature directing him to proclaim the evacuation of Kentucky by the Confederates; but the resolution was passed over his veto. In 1862, Aug., he resigned his office, and in 1867 was elected to the lower house of the state legislature.

MAGOG, *mā'gŏg:* town in Stanstead co., in the province of Quebec, Canada,; on Lake Memphremagog at its outlet, and on the Canadian Pacific; about 19 m. s.w. of Sherbrooke. It has regular daily communications with Newport and other places in Vermont. Magog is a favorite resort for anglers. Pop. (1901) 3,516.

MAG'OT. See BARBARY APE.

MAGPIE, n. *măg'pī*, or PIE [L. *pica;* It. *pica;* F. *pie*, a chatterer, a pie, and the familiar *mag*, for *Margaret*]: chattering, parti-colored bird of the crow kind. Magpie is a genus of birds of family *Corvidæ* (q.v.), differing from the true crows chiefly in the long and graduated tail. They are also of smaller size and brighter colors, the most prevalent color being blue with bars of black and white.—The only British species is the COMMON MAGPIE (*P. caudata*), the *Kitta* of the Greeks, and *Pica* of the Romans; formerly a common bird in Britain, and almost all parts of Europe; its bright but not finely mingled colors—black, white, and blue—making it always conspicuous, and its dissonant harsh cry equally attracting attention. The magpie is seen generally in pairs throughout the year. It builds its nest in high trees; the outside being formed of thorny sticks strongly inter-

woven, the inside plastered with earth and lined with fibres and dry grass; the top a dome, and one aperture left on the side for the parent bird. The magpie formerly familiar around farmsteads, a merry and saucy bird, has become suspicious and shy, having for some generations been persecuted as a pilferer. It is vigilant in an extreme degree, notable for cunning, both in eluding enemies, and in seeking its own food, as to which it may be said that nothing comes amiss to it, grain being not unacceptable, but eggs or carrion preferable. Though in Britain it is persecuted, in Norway it is encouraged in the neighborhood of human habitations, and consequently often makes its nest under the eaves of churches and other buildings. The magpie is easily tamed, becomes impudently familiar, and learns to articulate a few words. Both in a wild and tame state, it has a propensity to seize and carry off bright and glittering articles. It abounds in most parts of Europe and N. Asia, and in the middle and western parts of N. America, though rare in America near the Atlantic.—The other species are natives mostly of eastern Asia.

MAGRATH′, William: American painter: b. Cork, Ireland, 1838, Mar. 20. He emigrated to the United States in 1855, and was elected National Academician in 1876. He has produced many excellent landscapes and his genre pictures are full of character. Among them may be mentioned: *The Road to Kenmair* (1871); *The Reveillé* (1873); *Rustic Courtship* (1877); *On the Old Sod* (1879), which last is in the New York Metropolitan Museum.

MAGRUDER, *ma-grô′dėr,* John Bankhead: American soldier: b. Winchester, Va., 1810, Aug. 15; d. Houston, Tex., 1871, Feb. 19. He was graduated at West Point in 1830, served for a stort time in the 7th infantry, then in the artillery. In 1836 he was made first lieutenant, saw service in the Seminole war 1837-8, and became captain in 1846. He took an active part in the Mexican war, rising to the rank of lieutenant-colonel. In 1861, while in garrison at Washington, D. C., he resigned from the United States army, accepted a Confederate colonelcy, and commanded the artillery at Richmond. In the same year he won the battle of Big Bethel (q.v.), and was made brigadier-general and major-general. Assigned to the Yorktown district, he fortified the peninsula, and with a force of 12,000 held it against the Army of the Potomac in 1862, Apr. In the Seven Days' Battles (q.v.) he commanded the Confederate left. In 1862, Oct., he was appointed commander of the department of Texas. He recaptured Galveston 1863, Jan. 1, and broke the blokade of that port. After the war he served as major-general in the army of Maximilian in Mexico until the end of the empire, then settled at Houston for the rest of his life.

MAGRUDER, Julia: American novelist: b. Charlottesville, Va., 1854, Sept. 14; d. Richmond, Vt., 1897, Aug. 30. Her education was conducted privately, and her literary career began in 1885 with *Across the Chasm*, published anonymously. She wrote: *A Magnificent Plebeian; The Violet; Miss Ayr of Virginia; A Manifest Destiny; Princess Sonia* (1895); *The Child Amy; Labor of Love; Dead Selves; A Realized Ideal; A Beautiful Alien; The Thousandth Woman* (1905); etc.

MAGUEY, *ma-gwā'*. See Fibre.

MAGUINDANAO, *mâ-gēn-dâ'now*, a tribe of Moros who inhabit the valley of the Rio Palangui, island of Mindanao; the Moros of the Sarangani Islands, and some of those of Davao Bay belong also to this group. See Philippine Islands.

MAGYARS, *mŏ'gyŏrz:* the original name of the Hungarians, which they still use in preference to any other. See Hungary.

MAHÂBHÂRATA, n. *mâ'hâ-bâ'râ-tă* [from Sanskrit *mahat*—changed to *mahâ*—great, and *Bhârata*]: name of one of the two great epic poems of ancient India. (For the other, see Râmâyan'a.) As its main story relates to the contest between two rival families, both descendants of a king, Bharata, the word Mahâbhârata probably implies 'the great history of the descendants of Bharata'; for another explanation of the word, which connects it with *bhâra*, weight, was obviously invented merely to convey an idea of the enormous extent of this poem. According to this explanation, it would mean the 'very weighty (poem),' because, 'when weighed, it was found to be heavier than all the four Vedas together with their mystical writings.' However devoid of grammatical value this popular account of the word Mahâbhârata may be, it does not exaggerate the bulk of this epos, which, in its present condition, consists of more than 100,000 verses, each containing 32 syllables; while, if a tradition, reported in the introduction to the work itself, could be trusted, it was formerly known in other recensions of still greater extent. In its actual shape, it is divided into 18 parvans or books, the *Harivans'a* (q.v.) being considered a supplementary part of it. That this huge composition was the work not of one individual, but of successive ages, clearly appears from the multifariousness of its contents, from the difference of style in its various parts, and even from the contradictions which it presents. Hindu tradition ascribes it to *Vyâsa;* but as Vyâsa means 'the distributer or arranger,' and as the same individual is also the reputed compiler of the Vedas, Purânas, and several other works, it is obvious that no historical value can be assigned to this generic name. The contents of the Mahâbhârata may be distinguished into the leading story and the episodical matter connected with it. The former is probably founded on real events in the oldest

history of India, though in the epic narrative it is difficult to disentangle the reality from the fiction. The story comprises the contest of the celebrated families called the Kauravas and Pân'd'avas, ending in the victory of the latter, and in the establishment of their rule over northern India. Kuru, descendant of Bharata, had two sons, Dhr'itarâsh'tra and Pân'd'u. The sons of the former, commonly called the *Kauravas*, were a hundred in number, the eldest of them being Duryodhana; those of Pân'd'u—the *Pân'd'avas*—were five, Yudhish'thira, Bhîma, Arjuna, and the twins Nakula and Sahadeva. Pân'd'u having resigned his throne, Dhr'itarâsh'tra, though blind, assumed the government, and ultimately divided his kingdom between his sons and the sons of Pân'd'u. The former, however, coveting the territory allotted to the Pân'd'u princes, endeavored to get possession of it. A game of dice was the means by which they bound over their cousins to relinquish their kingdom, promising, however, to restore it to them if they passed 12 years in the forests, and a thirteenth year in such disguises as to escape detection. This promise was faithfully kept by the Pân'd'avas; but the term of their banishment having expired, the Kuru princes refused to redeem their word. A war ensued, ending in the complete destruction of the Kauravas. These are the meagre outlines of the leading story of the Mahâbhârata, where, as may be inferred, Duryodhana and his brothers are pictured as the type of all conceivable wickedness, and the Pân'd'u princes as paragons of virtue and heroism. That the latter are the incarnations of sundry deities—that the gods take an active part in the development of the plot, in short, that Hindu mythology is always interwoven with these stirring events of semi-historical Hindu antiquity, will be a fact recognized on even a slight acquaintance with Hindu poetry. It is necessary, however, to observe that out of the 100,000 verses, barely a fourth part is given to this narrative; all the rest is episodical. The matter thus incidentally linked with the main story, may be distributed under three principal heads, passing over such minor additions as fables, genealogical lists, geographical enumerations, and the like. One category of such episodes comprises narratives relating to the ancient or mythical history of India, e.g., the episodes of Nala and S'akuntalâ; a second, more strictly mythological, comprises cosmogony and theogony; a third is didactic or dogmatic—it refers to law, religion, morals, and philosophy, as in the case of the celebrated Bhagavadgîtâ, and the principal portions of the 12th and 13th books. By means of this episodical matter, which at various periods, and often without regard to consistency, was superadded to the original structure of the work, the Mahâbhârata gradually became a collection of all that was needed to be known by an educated Hindu; in fact, it became the encyclopedia of

India. 'There is no narrative on earth,' the Mahâbhârata says of itself, 'that is not founded on this epos. . . . The twice-born, though knowing the four Vedas and their supplementary sciences, has no wisdom unless he knows this great epos. . . . It is the great manual of all that is moral, useful, and agreeable.' Yet it should be noticed that the Brahmanic authors of the great epos intended it especially as an encyclopedia for the Kshattriya or military caste; for it is chiefly the history, the interests, the religion, and the duties of the second caste which are taught in it, always, of course, with a view to establishing the superiority of the Brahmanic caste. Sectarian religion is for this reason not emphasized in the Mahâbhârata, though the later sectarian works (see PURÂNA) have largely drawn, for their purposes, on the mythological material afforded them by the great epic work. The text of the Mahâbhârata was published in Calcutta in four quarto vols. (1834-9), another at Bombay, 1863. The best researches on the Mahâbhârata are those by Lassen, especially in *Indische Alterthumskunde.* A sort of analysis of the leading story of the Mahâbhârata is given in Eichhoff's *Poesy Héroïque des Indiens* (Paris 1860), and by Prof. Monier Williams (*Indian Epic Poetry,* 1863). Fauche's French translation of the Mahâbhârata (10 vols. 1863-72) is imperfect. Many episodes (as the BHAGAVAD-GITA, q.v.) have been separately published, as by Pavie, Foucaux, Bopp, and others. See Talboys Wheeler's *History of India* (1867).

MAHADEVA, *ma-hâ-dā'va* ('the great god'): one of the usual names of the Hindu god S'iva. (His consort, Durgâ, is similarly styled *Mahâdevî,* 'the great goddess.') In Buddhistic history, Mahâdeva, who lived 200 years after the death of the Buddha S'âakyamuni (the Buddha is supposed to have died after the beginning of the 6th c. B.C.), is a renowned teacher who caused a schism in the Buddhistic Church. His adversaries accuse him of every possible crime, but as he is ranked among the Arhats, his eminence cannot be doubted. The school founded by him is called *Pûrvas'aila.* See W. Wassiljew, *Der Buddhismus;* Oldenberg's *Buddha* (transl. 1882).

MAHAFFY, *ma-hăf'ĭ,* JOHN PENTLAND, M.A., D.D., D.C.L.: Irish Greek scholar: b. Chapponaire, near Vevay, Lake Geneva, Switzerland, 1839, July 12. He was educated in Germany and at Trinity College, Dublin, from which he was graduated in 1859; was appointed to a competitive fellowship in 1864; and became professor of ancient history in the college in 1871. In 1873 he was Donnellan lecturer. His first publication was a translation of Kuno Fischer's *Commentary on Kant* (1866); and on philosophical subjects he has since issued *Kant's Critical Philosophy for English Readers* (with J. H. Bernard 1872; new ed. 1889), containing a translation of the *Prolegomena* and a defense of the critical philosophy; and a volume on *Descartes* (1880) in Blackwood's

Philosophical Classics. The greater number of his works, however, treat of the history, literature, and everyday life of ancient Greece, among these being the following: *Prolegomena to Ancient History* (1871); *Greek Social Life from Homer to Menander* (1874); *Greek Antiquities* (1876), a work much used in continental schools; *Rambles and Studies in Greece,* a record of antiquarian research (1876); *Old Greek Education* (1879); *History of Classical Greek Literature* (1880; 3d ed. 1891); *Greek Life and Thought from Alexander to the Roman Conquest* (1887), a continuation of the work of 1874; *The Greek World Under Roman Sway* (1890), a continuation of the preceding; *The Story of Alexander's Empire* (1890); *Greek Pictures* (1890); *Problems in Greek History* (1892); *The Progress of Hellenism in Alexander's Empire* (1905). He edited the English translation of Victor Duruy's *Roman History* (1883-6); and has given some attention to Egyptian history, especially in the Greek period, the fruits of his studies in this field being his edition of the *Flinders-Petrie Papyri* for the Royal Irish Academy (1891-3), and a work on the Empire of the Ptolemies (1896). He writes with particular interest and authority of the post-Alexandrian period of Greek life; and is continually discovering interesting parallels between that and modern civilization. What he may have sacrificed in pure scholarship he has gained in the vividness of his historical presentation. Among his other writings are: *Twelve Lectures on Primitive Civilization* (1868); *Report on the Irish Grammar Schools* (1880-1); *The Decay of Modern Preaching* (1882); *The Art of Conversation* (1889); *An Epoch in Irish History.*

MAHAN, *ma-hăn'*, ALFRED THAYER, D.C.L., LL.D.: American naval officer: b. West Point, N. Y., 1840, Sept. 27. He was graduated from the United States Naval Academy in 1859, and served during the Civil war, rising to the rank of lieutenant-commander in 1865. In 1885 he was promoted captain, and in 1886 was appointed president of the Naval War College at Newport, a position which he held till 1888, and again from 1892-3. In 1893-5 he was commander of the *Chicago,* and in 1896 was retired from active service at his own request. In 1898 during the war with Spain he was a member of the Naval Board of Strategy; and in 1899 one of the United States delegates to The Hague peace conference, and in 1906 became rear admiral. In 1890 he published his chief work, *Influence of Sea Power Upon History,* the continuation, *Influence of Sea Power Upon the French Revolution and Empire,* appeared in 1892; his other writings include: *The Gulf and Inland Waters* (1883); *Life of Admiral Farragut* (1892); *Life of Nelson* (1897), highly commended by English critics; *The Interest of the United States in Sea Power* (1897), a compilation of his magazine articles; *Lessons of the Spanish War* (1899); *The Problem of Asia* (1900); *The South African War*

(1900); *Types of Naval Officers* (1901); *Retrospect and Prospect* (1902); *From Sail to Steam* (1907); *Some Neglected Aspects of War* (1907); etc. His *War of 1812* appeared in *Scribner's* in 1904, and was published in 1905 as *Sea Power in Its Relation to the War of 1812*.

As a historian he has made a distinct contribution to historical science as the first writer to demonstrate the determining force which maritime strength has exercised upon the fortunes of individual nations, and consequently upon the course of general history. Technically, his representative work, the *Influence of Sea Power Upon History*, is but a naval history of Europe from the restoration of the Stuarts to the end of the American Revolution. But the freedom with which it digresses on general questions of naval policy and strategy, the attention it pays to the relation of cause and effect between maritime events and international politics, and the author's literary method of treatment, place this work outside the class of strictly professional writings and make it a recognized leading authority. His prime object, in establishing the thesis that maritime strength is a determining factor in the prosperity of nations, was to reinforce his argument that the future interests of the United States require a departure from the traditional American policy of neglect of naval-military affairs. Captain Mahan was president of the American Historical Association in 1902-3.

MAHAN, Dennis Hart: American military engineer: b. New York City, 1802, Apr. 2; d. near Stony Point, N. Y., 1871, Sept. 16. He was graduated at West Point in 1824, where in 1825 he was appointed assistant professor of mathematics and engineering. He was stationed in Europe four years on professional duty and in 1832 returned to West Point as professor of military engineering, where he remained until his suicide, which was caused by temporary insanity. His text-books are generally recognized authorities and include: *Treatise on Field Fortifications* (1836); *Descriptive Geometry* (1864); *Military Engineering* (1865); *Permanent Fortifications* (1867); *Military Course of Civil Engineering* (1837, rewritten 1868); etc.

MAHANNUDDY, *mâ-hâ-nŭd'dĭ* (accurately, Mahanadi): river of India, rising on the s.w. border of the presidency of Bengal, lat. 20° 20′ n., long. 82° e. After an eastward course of 520 m., 300 m. of which are navigable, having divided into several branches at the town of Cuttack, which forms the head of its delta, it flows e. and s.e. through the dist. of Cuttack, and falls by several mouths into the Bay of Bengal.

MAHANOY CITY, *mā-ha-noy':* city in Schuylkill co., Penn.; on the Philadelphia and Reading and the Lehigh Valley railroads; 10 m. n.e. of Pottsville, 56 m. n.e. of Harrisburg, 80 m. n.w. of Philadelphia; 1,211 ft. above

sea-level. It is in a large and rich anthracite coal region; has gas and water works, 2 national banks (cap. $225,000), 14 churches, public library, excellent public and private schools, iron foundry, and 2 newspapers. M. C. was settled 1859. Pop. (1890) 11,286; (1900) 13,504.

MAHARAJAH, n. *mâ'hâ-râ'jă* [Skr. *maha*, great; *rajah*, a king]: a Hindu sovereign prince.

MAHARMAH, n. *mă-hâr'mă:* a muslin wrapper worn over the head, and across the mouth and chin, by Turkish and Armenian women when they go abroad.

MAHÂSÂNGHIKA: one of the two great divisions of the Buddhistic Church which arose about 200 years after the death of the Buddha S'âkyamuni, or about 343, caused, as it seems, by the schism of Mahâdeva (q.v.). For the other division, see STHAVIRA. Out of the M. school arose numerous sects.

MAHATMA, n. *mâ-hât'mâ* [Sans. great-souled one]: an adept in theosophy or occultism. In the first stage the *Yogi* (mystic) begins to learn and battles with his animal nature; in the second stage still advances; and in the third the M. overcomes the material, so that neither earth, air, fire, nor water can harm him. He can project his 'astral body' far from the material form, and appear to others at almost limitless distances. In the fourth stage, the M. loses all personality and separate consciousness, is free from sorrow and illusion, and knows the absolute truth in its unveiled splendor.—See THEOSOPHY.

MAHÂVANSA: title of two celebrated works written in Pâli, relating to the history of Lankâ, or Ceylon (q.v.), from its earliest period till the reign of Mahâsena, who died A.D. 302. The older work was composed probably by monks of the convent Uttaravihâra at Anurâdhâpura, cap. of Ceylon. Its date is uncertain; but it apparently preceded the reign of Dhâtusena (A.D. 459–477), as that monarch ordered it to be read in public, a circumstance which seems to prove its celebrity already at his time.—The later work of the same name is an improved edition and continuation of the former. Its author was *Mahânâma*. See Lassen, *Indische Alterthumskunde* (1852; 2d ed. 1875).

MAHÂVÎRA (literally 'great hero'), called also *Vîra* and *Vardhamâna:* the 24th or last Jina, or deified saint, of the Jainas (q.v.), described as of golden complexion, and having a lion for his symbol. His legendary history is given in the *Kalpa-Sûtra* (q.v.) and the *Mahavîra-Charitra*, two works held in great authority by the Jainas. According to these works, M.'s first birth occured at a period infinitely remote; it was as Nayasâra, head man of a village, that he first appeared in the country of Vijaya, subject to S'atrumardana. He was born next as *Marîchi*, the grandson of the first Jaina saint *R'ishabha*; he then came to the world of Brahmâ, was reborn as a worldly-minded Brâhman'a, and after several other births—each being separated from the other

by an interval spent in one of the Jaina heavens, and each period of life extending to many hundreds of thousands of years—he quitted the state of a deity to obtain immortality as a saint, and was incarnate toward the close of the fourth age (now past), when 75 years and $8\frac{1}{2}$ months of it remained. After he was 30 years of age, he renounced worldly pursuits, and departed, amid the applauses of gods and men, to practice austerities. Finally, he became an Arhat or Jina; and at the age of 72 years, the period of his liberation having arrived, 'he resigned his breath,' and his body was burned by Indra and other deities, who divided among them such parts as were not destroyed by the flames, as the teeth and bones, which they preserved as relics; the ashes of the pile were distributed among the assistants: the gods erected a splendid monument on the spot, and then returned to their respective heavens. The period of these events is not stated, but judging from some of the circumstances narrated, the last Jina would have expired about B.C. 500: other authorities make the date about a century and a half earlier. The works above referred to state, with considerable detail, the conversions worked by Mahâvîra. Among the pupils were *Indrabhûti* (called also Gautama, and for this reason, but erroneously, considered as the same with the founder of the Buddhist religion), *Agnibhûti*, *Vâyubhûti*—all three sons of Vasubhûti, a Brâhaman'a of the Gotama tribe, and others. These converts to Jaina principles are mostly made in the same manner: each comes to the saint prepared to overwhelm him with shame, when he salutes them mildly, and, as the Jainas hold, solves their metaphysical or religious doubts. Thus, Indrabhûti doubts whether there be a living principle or not; Vâyubhûti doubts if life be not body; Man'd'ita has not made up his mind on the subjects of bondage and liberation; Achalabhrâtr'i is skeptical as to the distinction between vice and virtue; and so on. M. removes all their difficulties, and by teaching them the Jaina truth, converts them to the doctrine of his sect. For a summary account of the life of this saint, see H. T. Colebrooke's *Miscellaneous Essays*, II. 213, ff.; H. H. Wilson's works, I. 291, ff.

MAHDI, El, *ĕl mâ'dē* [Arab. the one who is guided rightly]: designation among Mohammedans of a leader, divinely commissioned to appear suddenly for the establishment of Islam by the extermination of all unbelievers. It was originally the title assumed by the 3d caliph of the house of Abbas (abt. 785); since then it has been claimed by numerous pretenders in various parts of the Mohammedan world. Notable among these is the last Imam of the house of 'Ali. 'Ali's son Mohammed is the one concerning whom first—it is said—the notion spread after his death, that he was only hidden and would come forth to lead the armies of the faithful: the Shiites generally however attach this superstition to the 12th Imam as to their Messiah; he mysteriously disappeared 879. The most famous pretender to the title

M. was the first Fatimite caliph in n. Africa (d. 934). The Almohades (q.v.) were led by a pretended Mahdi. During 1880–90, three M.'s have been prominent, one in Turkey, two in Africa. Of these, Sheikh Mohammed-Ahmed, of Dongola, in Sudan, is best known, having antagonized the English movements in that region (see SUDAN). He was b. abt. 1845 in Dongola; apprenticed to a ship-builder; ran away and became a begging Dervish at Khartum, and later on an island in the White Nile, living in a pit, and attracting by the fame of his holiness thousands whose offerings made him rich. 1881, May, he announced himself as El Madhi, commissioned of God to restore a pure Islamism, overcome all nations, and reform society throughout the world. He succeeded in creating a most mischievous excitement in all the region of the Upper Nile; but was utterly routed by Gen. Kitchener at Omdurman, near Khartoum, 1898.

MAHDIAN, n. *mâ′dĭ-an*, or MAHDIST, *mâ′dĭst:* follower or adherent of the Mahdi.

MAHIM, *mâ-hēm′:* town of the island of Bombay, seven m. n. of the city of Bombay, to which it is joined by railway. It is on the south side of the channel separating the island from Salsette, and at the point where they are connected by a road running partly on arches of masonry, partly on a causeway. The passage is commanded by a fort. The town is ill built, and inhabited chiefly by Christians of Portuguese descent, who have here a church and other relics of their former prosperity. The inhabitants are chiefly employed in fishing, the place being famous for its oysters. Pop. 9,000.

MAHL-STICK, n. *mawl′stĭk* [Ger. *maler-stock*—from *maler*, a painter; *stock*, stick]: the stick used by painters to serve as a rest to the right hand while painting; also written MAUL-STICK.

MAHMOOD′ (or MAHMÛD′) of GHIZNI (ABUL-KASIM-YEMINED-DAULAH), Sultan of Persia: see GHIZNEVIDES.

MAHMUD II., *mâ-môd′*, Sultan of Turkey: 1785, July 20—1839, July 1 (reigned 1808–39); younger son of Sultan Abdul-Hamed. On the deposition of his brother, Mustafa IV., by Baïraktar, Pasha of Ruschuk, M. was raised to the throne. Baïraktar became his grand vizier, and vigorously aided him in his attempts to reform the Turkish army. But the Janizaries rose in rebellion, and the murder of the vizier temporarily checked military reforms. M. also was attacked by the rebels, but he secured his life and the throne by the destruction of all the other members of the royal house of Osman. The war with Russia, of three years' duration, completely prostrated the strength of Turkey: peace was concluded at Bucharest (q.v.). The daring and energetic M. then applied himself to the subjugation of the semi-independent pashas of the outlying provinces, and to reforms in all departments of the government. The rebellion of the Wahabis was crushed through the instrumentality of Ibrahim Pasha 1818; and Ali Pasha (q.v.),

the 'Lion of Janina,' was overthrown 1822. Greece revolted 1821, and its independence was secured by the battle of Navarino 1827, but it was not recognized as a separate kingdom by Turkey till 1830, Apr. During the Greek revolution, M. had been secretly maturing his plans of military reform, and 1826 June, the success of his schemes was crowned by the destruction of the Janizaries (q.v.). The consequent confusion in Turkey was immediately availed of by Russia for obtaining fresh concessions. The disastrous termination of the succeeding war with Russia (1828–9), did not interfere with his projects of reform. The successful revolt of the Greeks, and the late triumph of the Russians, together with the disaffection manifested by the Christian population of Turkey, excited in the ambitious mind of Mehemed Ali, Pasha of Egypt, the desire for independence: see MEHEMED ALI. The war which ensued was from first to last in favor of the Egyptains; but the intervention of Russia compelled both parties to agree to a treaty (1833) satisfactory to neither. M. was then forced to grant fresh concessions to his 'good friend and ally' the czar, by the treaty of Unkiar-Skelessi (q.v.), 1833, July 8, and by another treaty in the following year. He was again at liberty to pursue his reforms in civil administration, the principal improvements being the modification and readjustment of the more oppressive taxes, the formation of a militia on the principle adopted by England, increased privileges to Frankish merchants, and the abolition of the export duty on grain. In 1839, he renewed the war with Mehemed Ali, but died before its conclusion.

MAHOGANY, n. *mă-hŏg′ă-nĭ* [W. I. *mahagoni*, a native name]: a forest-tree of tropical Amer. the *Swiĕtē′nĭa mahag′ŏnī*, ord. *Cedrelācĕæ:* also the wood of the trunk. The tree is 80–100 ft. high, native of the W. Indies and S. America. It has pinnate leaves with 3–5 pair of leaflets, and panicles of small whitish or yellow flowers, the stamens united into a tube toothed at the summit, and set round on the inside with 8–10 anthers. The capsule is 5-celled, about the size of a man's fist, hard, woody, and oval, and the seeds are winged at the apex. It attains immense size, second to few others, and its timber is generally sound throughout in the largest trees. The slow progress which it is observed to make, clearly indicates that the trees which are cut for use must have attained a great age: 200 years has been assumed as an approximation. It is most abundant on the coast of Honduras and around Campeachy Bay, whence the greater portion of that used in Europe is exported. St. Domingo and Cuba also yield a considerable quantity, of finer quality than that obtained from the mainland, which is frequently called Bay Wood, to distinguish it from the Cuba mahogany, usually called Spanish. The occupation of cutting this timber and removing it to the coast for shipment, is exceedingly laborious, and employs a large number of men and oxen. The wood varies much

in value, according to the color and beauty of curl; single logs have occasionally brought as much as $5,000, for cutting into veneers, in which form it is generally used, its great weight and value unfitting it for being always employed solid. It was first introduced into Britain by accident 1597, having been used to repair one of Sir Walter Raleigh's ships at Trinidad; but though the wood so employed was much admired, it did not become an article of commerce until a little more than a century later, when another accident brought it into notice and demand, and it became an article of luxury, and has since maintained the highest position as a cabinet-maker's wood. The annual imports into Britain are about 40,000 tons, with a value of about £400,000. The bark has a faint aromatic smell, and a very astringent bitter taste, and in the countries where the tree grows, is used as a medicine. In England it has been recommended and used under the name *Mahogany Bark*, or *Amaranth Bark*, as a substitute for Peruvian Bark.—EAST INDIA MAHOGANY is the timber of the *Rohuna Tree* (*Soymida febrifuga*), and AFRICAN MAHOGANY of the *Khaya Senegalensis*, both of the order *Cedrelaceæ*.

MAHOMET, n. *mȧ́hŏm-ĕt*, spelled also MOHAM′MED (q.v.): author and founder of a new system of religion and civil polity, born at Mecca, in Arabia, A.D. 571. MAHOMETAN, n. *mă-hŏm′ĕ-tăn*, or MOHAM′MEDAN, a follower of Mahomet; a Mussulman: ADJ. of or pertaining to Mahomet. MAHOM′ETANISM, n. *-tăn-ĭzm*, or MOHAM′MEDANISM, n., the religion established by Mahomet. MAHOM′ETANIZE, v. *-tăn-īz*, to convert to the religion or customs of the Mahometans. MAHOM′ETANI′ZING, imp. MAHOM′ETANIZED, pp. *-īzd*.

MAHON′, Viscount: see STANHOPE (PHILIP HENRY), Earl.

MAHONE, *ma-hōn′*, WILLIAM: engineer: b. Southampton co., Va., 1826, Dec. 1. He graduated at the Va. Milit. Institute 1847; became a civil engineer; constructed the Norfolk and Petersburg railroad; assisted in seizing the Norfolk navy yard at the outbreak of the rebellion, 1861, Apr.; raised the 6th Va. regt. for the Confederate army, and commanded it in the chief operations in Va.; was promoted brig.gen. 1864, Mar., and maj.gen. Aug. 12; subsequently commanded a div. in Gen. Ambrose P. Hill's corps; and was in command at Bermuda Hundred when Gen. Lee surrendered. After the war he became conspicuous as a republican politician; organized and led the 'readjuster' party, which advocated the repudiation of the state debt conditionally; was U. S. senator 1881–87; and was defeated for re-election. He was an astute politician, had a large following in Va., and aroused intense animosity. He d. 1895, Oct. 8.

MAHO'NIA: see BARBERRY.

MAHOPAC, *ma-hō′păk*, LAKE: one of the numerous lakes of Putnam co., N. Y.; abt. 45 m. n. of New York, 12 m. e. of the Hudson river, 10 m. from the Conn. state line.

It is 1,800 ft. above sea-level, 8 or 9 m. in circumference, and is a favorite summer resort.

MAHOUND, n. *mâ-hownd':* an old contemptuous name for Mahomet; a fierce, savage character; the devil.

MAHOUT, n. *mă-hôt':* in *E. I.*, an elephant-driver.

MAHRATTAS, *mâ-rât'taz:* people of Hindu race, inhabiting central India, s. of the Ganges, from Gwalior to Goa; supposed by many to be the descendants of a Persian or N. Indian people driven southward by the Mongols. They are mentioned in history first about the middle of the 17th c., when they possessed a narrow strip of territory on the w. side of the peninsula, from 15° to 21° n. lat. The founder of the Mahratta power was Sevaji, a freebooter or adventurer, whose father was an officer in the service of the last king of Bejapûr. By policy or by force, he eventually compelled the several independent chiefs to acknowledge him as leader, and with the large army then at his command, overran and subdued a large portion of the emperor of Delhi's territory. His son and (1680) successor, Sambaji, after vigorously following out his father's policy, was taken prisoner by Aurungzebe 1689, and put to death. The incapacity of the subsequent rulers who reigned under the title of *Ramrajah* ('great king'), led the two chief officers of state, the *Peishwa*, or prime minister, and the paymaster-gen., to divide the empire between them, about 1749; the former fixing his residence at Poona, and retaining nominal supremacy over the whole nation of the M.; while the latter made Nagpûr his capital, and founded the empire of the Berar Mahrattas. This paction, of course, required the sanction of the more important among the minor chiefs and officers of state, who gave their consent on condition of receiving a share of the spoil. The ultimate result was the partition of the Mahratta kingdom into a great number of states, more or less powerful and independent; chief among which were, besides the two above mentioned, Gwalior, ruled by the Rao Scindia; Indore, by the Rao Holkar; and Baroda, by the Guicowar. It was to be expected that the usual intestine wars would supervene, and ultimately the E. India Company was compelled to interfere. The invasion of the Delhi empire by Nadir Shah afforded these wild and warlike mountaineers an opportunity, of which they eagerly availed themselves, to wrest additional territory from the feeble grasp of the Mogul emperor. From this time they discharged the office of arbiters in the quarrels between the emperor, his vizier, and his rebellious subjects; but their frightful defeat (1761, Jan.) at the hands of Ahmed Shah Abdalli, ruler of Afghanistan, on the field of Paniput, where they lost 50,000 men, and all their chiefs except Holkar, weakened their power for a time. They still, however, continued to be the hired mercenaries of the Delhi emperor, till the growing influence of the British compelled them to look to their own safety. After many long and bloody

contests with the British and their allies, in which sometimes the whole, but more frequently a portion of the M. joined, they were one by one, with the exception of Scindia, reduced to a state of dependence. This last-mentioned chief, having raised a powerful army, officered by Frenchmen, and disciplined after the European method, continued the contest for a number of years, till his power was finally broken 1843. The dignity of Peishwa was abolished 1818, and his territories were occupied by the British, with the exception of a portion which was made over to another Mahratta chief, the Rajah of Sattara, their faithful ally; Nagpûr and Sattara subsequently reverted to the British govt., but the other chiefs still possess extensive dominions, under British protection.

The M. are a vigorous and active race, and though diminutive and ill-formed, are distinguished for courage. They are cruel and perfidious, and have exercised a disastrous influence on the inhabitants of the countries that they have conquered. Though devout worshippers of Brahma, no distinctions of caste exist among them. Some American and other missionaries among them have had encouraging success.

MAI, *mâ'ē*, nearly *mī*, ANGELO, Cardinal: distinguished editor and scholar in ancient literature: 1782, Mar. 7—1854, Sep. 9; b. in the village of Schilpario, Lombardy; of peasant parentage. He was educated and lived till 1808 in establishments belonging to the Jesuits; but obtained an appointment first as associate, and ultimately as doctor in the celebrated Ambrosian Library at Milan. His career as an author dates from this appointment. In 1813, he published a translation and commentary of Isocrates, *De Permutatione;* but his reputation is due to his publications of the palimpsests or re-written manuscripts, the first specimens of which he issued at Milan (see PALIMPSEST). His earliest publications in that line were fragments of *Cicero's Orations;* of the *Vidularia*, a lost play of Plautus; of *Letters of Fronto*, Marcus Aurelius's preceptor; the *Chronicon* of Eusebius, and other less important works. These were eclipsed by his edition and restoration of the *De Republica* of Cicero, 1820. Meanwhile M. had been invited to Rome by Pius VII., and named to the charge of the Vatican Library, with other honorable and emolumentary appointments. He at once turned his attention to the unedited MSS. of the Vatican, and undertook, as the mission of his life, the task of publishing those among them which had been overlooked by earlier editors. Though he was appointed, 1833, to the onerous office of secretary of the Propaganda, and 1838 to the cardinalate itself, his Roman publications form a collection of an extent and importance almost unexampled in modern times. His first series was in ten 4to vols., entitled *Scriptorum Veterum Nova Collectio, e Vaticanis Codicibus edita* (Rome 1825). It consists, like the great collections of Mabillon, Montfaucon, D'Achery, and others, of miscellaneous unpub-

lished works, partly sacred, partly profane, and indifferently in the Greek and the Latin languages, comprising an entire vol. of palimpsest fragments of the Greek historians, Polybius, Diodorus, Dion, Dionysius, and others. The succeeding collections, viz. *Classici Auctores ex Codicibus Vaticanis* (10 vols. 8vo, 1838), *Spicilegium Romanum* (10 vols. 8vo, 1839-44), and *Nova Patrum Bibliotheca* (6 vols. 4to, 1853) are on the same plan, all equally replete with new and interesting materials. For many years he was engaged in preparing an edition of the celebrated *Codex Vaticanus,* which he had printed, but the publication of which was postponed, awaiting the preparation of his intended preliminary dissertations. He died, however, rather unexpectedly, near Albano; and as no trace of the expected preliminary matter was found among his papers, the edition was published (1857) entirely without critical matter, and was not satisfactory; neither is a subsequent, and sumptuous ed. by Vercellone and Cozza (Rome 1868), all that can be desired. (A good ed. of the *Codex* by Tischendorf, appeared 1867). Mai, though a most laborious and persevering discoverer, was not a textual critic of the first rank for either sagacity or accuracy. His library, which he bequeathed to the Vatican at half its estimated value, was purchased by the pope on the terms of Mai's will, which applied the proceeds of the sale to relief of the poor of his native village.

MAIA, n. *mā'yâ:* in Gr. *myth.,* daughter of Atlas, and mother of Hermes or Mercury.

MAIA. See PLANETOIDS.

MAIA, n. *mā'yâ:* in *zool.,* the spider crab; typical genus of the family *Maiidæ.*

MAID, n. *mād* [Goth. *magus,* a boy; *magaths,* a maid: O.H.G. *magad;* Ger. magd, a maid: W. *magu;* Bret. *magœ,* to breed: comp. Gael. *maighdean,* a virgin]: a virgin; an unmarried woman; a female servant. MAID-SERVANT, a female servant; an implement in the laundry, consisting of a wooden stem, having a stout cross-handle at one end, and a kind of knob at the other. MAIDEN, n. *mād'n,* a maid; a young unmarried woman; a guillotine formerly used in Scotland: ADJ. pertaining to a maid or to the unmarried state; fresh; new; unpolluted; first, as a *maiden* speech. MAID'ENLY, a. *-lĭ,* like a maid; gentle; modest: AD. in a maiden-like manner. MAIDEN-LIKE, like a maiden. MAIDENHOOD, n. *mād'n-hûd,* or MAID'ENHEAD, n. *-hĕd* [AS. *mædenhad*]: virginity; newness; freshness; virgin purity. MAID'ENLINESS, n. *-lĭ-nĕs,* the quality of being maidenly; modest. MAIDEN ASSIZE, assize at which there is no criminal to be tried. MAIDEN-HAIR, genus of beautiful ferns. MAIDEN SPEECH, the first speech of one in a public assembly, as a newly elected M.P. making his first speech in parliament. MAIDS OF HONOR, ladies of high birth in attendance on a queen. MAID-OF-ALL-WORK, a general servant for all domestic work.

MAID'EN, The: name given to a machine for beheading criminals, in use in Scotland from about the middle of the 16th century to nearly the end of the 17th century. It is said to have been introduced into Scotland by the Regent Morton, who had seen it at Halifax, in Yorkshire, and was himself the first to suffer by it; but he certainly was not its first victim. Fifteen years before he was put to death by it (1581), it was employed to behead Thomas Scott of Cambusmichael, one of the murderers of Riccio (1566). It seems to have been called at first indifferently 'The Maiden,' and 'The Widow,' a brutal sort of pleasantry. A frightful instrument of punishment used in Germany in the middle ages was called 'The Virgin': but it had no resemblance to the maiden, which was exactly like the French guillotine (q.v.), except that it had no turning-plank on which to bind the criminal. The maiden which was used in the Scottish capital is now in the Museum of the Antiquaries of Scotland at Edinburgh.

MAID'ENHAIR (*Adiantum Capillus-Veneris*): small, delicate, and graceful fern, with bipinnate fronds, alternate, obovate, and wedge-shaped membranaceous pinnules on capillary stalks, and marginal *sori* hidden beneath oblong *indusia;* growing on moist rocks and old walls, especially near the sea; rare in Britain, but very abundant in s. Europe, where it covers the inside of wells and basins of fountains (as at Vaucluse) with a tapestry of most delicate green. Another species of the same genus, *A. pedatum,* native of N. America, with *pedate* leaves, has a sweet, fragrant root-stalk, of which *Capillaire* (q.v.) is made. It is supposed that the name maidenhair originated in the use of a mucilage made from this fern by women for stiffening their hair. This name is sometimes applied also to some species of Spleenwort (*Asplenium*), as *A. adiantum nigrum* and *A. trichomanes.*

MAID'ENHEAD: municipal borough and market-town of England, county of Berks; amid beautiful scenery, on the right bank of the Thames, 22½ m. w. of London. It has a large brewery, and some trade in meal, malt, and timber. A fine stone bridge (1772) here crosses the Thames. Pop. (1901) 12,980.

MAID-MARIAN, n. *mād-mā'rĭ-ăn* [F. *morion,* a helmet]: a morris-dance; subsequently, the queen of the May, or female performer in it. *Note.*—This OE. term is derived by some from *mad-morion,* the boy performer in it wearing a morion; while others affirm it was an original and adopted name for the female performer, and after the dance degenerated into coarse buffoonery, the character was called *maid-maukin* instead of *maid-marian.*

MAIDSTONE, *mād'ston* (old form, *Medwegston*): county town of Kent, England, on the right bank of the Medway, 43 m. from London by the Southeastern railway, about midway from London to Dover. It is a mu-

nicipal borough. It stands in a noted corn-district; its grain-market is the most important in the county; and in the vicinity are the famous hop-grounds known as 'the middle growth of Kent.' The parish church, All Saints, built toward the close of the 14th century, in the perpendicular style, contains many interesting tombs. The remains of the College or Hospital of All Saints, which grew out of a hospital founded 1260 at the entrance of the town for the benefit of pilgrims traveling to Canterbury, are highly picturesque. Maidstone has numerous educational and charitable institutions. An extensive oil mill, several paper mills, sacking and twine manufactories, and several breweries are in operation. Pop. 33,516.

MAIDU PEOPLE: an aboriginal Pujunan group of Indians of northern California, of which the chief tribe, the Concow, inhabited the region of the Upper Sacramento river. Their descendants are to be found in the Round Valley Reservation. Their communities comprised rough dwelling-places or hogáns built of boards, large circular halls or town-houses for assemblies and ceremonials, and wicker store-houses for the winter supply of acorns, which, with piñons, formed their staple food supplies. Their clothing was of the scantiest description; the chief of their numerous dances was the acorn dance; and they had a secret male society in which the initiatory age was twelve.

MAIEUTIC, a. *mā-yūt'ĭk,* or MAIEUTICAL, a. *mā-yūt'-ĭk-ăl* [Gr. *maieutĭkos,* pertaining to a midwife—from *maia,* a midwife]: assisting child-birth; hence assisting or facilitating production.

MAIGNAN, *mā-nyân,* ALBERT: French painter: b. Beaumont, Sarthe, 1844, Dec. 15. He studied at Paris under Nöel and developed a strong and original manner in historical and landscape painting. At the Salon of 1879 he was awarded a first class medal. Amongst the most striking of his pictures are *Dante's Meeting with the Countess Matilda* (1881), now in the Luxembourg; and *Assault on Pope Boniface VIII. at Anagni,* in the New York Metropolitan Museum of Art.

MAIGRE, n. *mā'gėr:* in *cook.,* applied to preparations of any kind made without butcher's meat, poultry, or game, and cooked with butter instead of lard or dripping. MAI'GRE-DISH'ES, n. dishes eaten by Rom. Catholics on days when flesh-meat is forbidden. They include fish, vegetables, fruit, eggs, and omelets.

MAIGRE, *mā'gėr* (*Sciæna aquila*): fish of the acanthopterous family of *Sciænidæ,* common in the Mediterranean Sea, rare visitant of British shores. It attains a large size, being seldom taken less than 3 ft., while it is sometimes 6 ft. long. In general appearance it much resembles a large bass, but the head is shorter and more rounded, and the tongue and roof of the mouth are des-

titute of teeth. The maigre is in very high esteem for the table, and the head is a favorite delicacy of epicures. The strength of the maigre is such that a stroke of its tail will throw down a man; and when it is taken the fishermen therefore quickly stun it by a blow on the head. It is one of those fishes which emit a peculiar sound, which has been described as a kind of purring or buzzing, and has been heard from a depth of 120 ft. Fishermen have been guided by this sound to let down their nets so as to inclose a number of maigres. The maigre appears to be the *umbrina* of the Romans, highly esteemed for food. The stones of its ears were formerly set in gold, and worn on the neck, imaginary virtues being ascribed to them, particularly in the cure of colic; but it was requisite that they should be obtained as a gift and not by purchase.

MAIL, n. *māl* [F. *maille;* It. *maglia,* the mesh of a net, a ring—from L. *macula,* a spot, a hole]: defensive covering for soldiers, consisting of steel-ringed or net work; defensive armor for the body, more pliable and lighter than the cumbrous plate-armor: an article composed of rings interwoven, used in ships for rubbing off loose hemp from the cordage. MAIL-CLAD, or MAILED, a. *māld,* covered with defensive armor.

MAIL, n. *māl* [AS. *mal;* Icel. *mala,* tribute: Gael. *màl,* tribute, rent]: in *Scotch law,* a term signifying rent; tribute. BLACK-MAIL, a tax paid to freebooters for protection of property. RENT-MAILING, a farm. *Note.*—BLACK-MAIL was a purely Highland extortion; Gael. *blathaich* signifies, 'to protect, to cherish,' hence *black-mail* was the tribute or tax for protection—thus *black,* the color, has nothing to do with *black* in BLACK-MAIL—Dr. C. Mackay.

MAIL, n. *māl* [AS. *mal* or *mæl,* a spot, a blot: prov. Eng. *mail,* a speck on the feathers of a bird]: a spot on cloth, especially that which is caused by iron.

MAIL, n. *māl* [Norm. F. *male,* a large budget: F. *malle,* a trunk: O.H.G. *malaha;* It. *mala;* Bret. *mal,* a trunk, a case: Gael. *mala,* a bag, a purse]: *originally,* a bag for the conveyance of letters; *now,* any conveyance by which letters are forwarded to their destination; the letters themselves: V. in *Amer.,* to prepare for transmission by mail; to post letters or parcels (see POST-OFFICE). MAILING, imp. MAILED, pp. *māld,* transmitted by mail. MAILABLE, a. *māl'ă-bl,* that may be sent by post. MAIL-BAG, a leathern bag or sack, varying much in size, in which assorted letters and book-parcels are placed for a particular destination. MAIL-COACH, or -CART, a vehicle or carriage that conveys mail-bags, etc., from one place to another. MAIL-TRAIN, on a *railway* a fast train by which mail-bags are conveyed.

MAILED CHEEKS (*Sclerogenidæ* or *Triglidæ*): family of acanthopterous fishes, characterized by an enlarge-

ment of certain bones of the head and gill-covers to form a bony armor for the cheeks. They exhibit great variety of forms; some remarkable for elegance and for delicate or splendid hues; others for extreme ugliness. Gurnards (q.v.) are among the best known and most valuable of this family. To it belongs also Bull-heads (q.v.) and *Scorpænæ* (q.v.). Sticklebacks (q.v.) are sometimes referred to it. The species are widely distributed in the seas of all parts of the world; a few inhabit lakes and rivers.

MAIM, v. *mām* [OF. *mahain*, the mutilation of a membrane, a defect: mid. L. *mahannārĕ*, to maim; *mahamĭŭm*, a blemish: OE. *maym*, a hurt]: to deprive of any necessary part of the body; to disable; to cripple; to disfigure; to mangle; to mutilate: N. an injury done to the body by depriving it of a necessary part; a crippling. MAIM'ING, imp.: N. shooting, stabbing, or otherwise seriously injuring a person; therefore, as a criminal offense, properly belonging to the heads of Assault, Attempt to Murder, and offenses against the person generally. Maiming cattle is classed under the head of Malicious Injuries to Property. MAIMED, pp. *māmd:* ADJ. disabled in limbs; crippled. MAIMEDNESS, n. *mām'ĕd-nĕs*, state of being maimed.

MAIMON, *mī'mŏn*, SOLOMON BEN JOSHUA: b. Nieszwicz, Lithuania, 1754; d. Niederseigersdorf, Silesia, 1800, Nov. 22. While young he studied rabbinical literature closely. Revering Maimonides, he assumed the name Maimon. He studied in Germany, was befriended by Mendelssohn, and wrote *Attempt at a Philosophy of Transcendentalism* (1790), which Kant regarded as the most acute criticism of his philosophy. Maimon originated that widely influential speculative monistic idealism so prevalent in the philosophy and science of the first half of the 19th century, and which affected Fichte, Schelling, and Hegel.

MAIMONIDES, *mī-mŏn'ė-dēz*, or MOSES BEN MAIMON, *mō'zĕz bĕn mī'mon* (RAMBAM = RABBI MOSES BEN MAIMON), B. JOSEPH B. ISAAC B. JOSEPH B. OBADJAH, etc.; known in Arabic literature as ABU IMRAM MOUSA BEN MAIMON IBN ABD ALLAH: 1135, Mar. 30—1204, Dec. 13; b. Cordova; buried at Tiberias, Palestine: Hebrew Rabbi, one of the greatest of Jewish theologians and philosophers. Little is known of his early life, which was in the troublous period of the Moravide rulers. Under the guidance of the most distinguished Arabic masters of the time, Maimonides studied Greek (Aristotelian) philosophy, the science of medicine, and theology. When, 1148, the Al-Mohads (Unitarians) took Cordova, both Jews and Christians there were forced either to profess Islam or to emigrate. Maimonides's family chose exile, and for twelve years led a nomadic life in Spain. In 1160 they settled in Fez, Morocco. There, unnoticed by the authorities, they hoped to pass as Moslems. This life was hu-

miliating and dangerous. His reputation steadily grew, and the religious views of a young man so highly endowed were investigated. An informer charged him with the crime of 'relapse' from Mohammedanism to the Jewish faith. He was saved from death only by the intercession of a Moslem friend, a poet and a theologian. In 1665 Maimonides left Fez for Acre. 'From this time,' said he, 'I was saved from apostasy.' From Acre he went to Cairo by way of Jerusalem and Hebron. Fostât (Old Cairo) became from henceforth his home. Maimonides's brother David, a dealer in precious stones, supported the family till his death at sea. Maimonides, conscientiously opposed to making his living out of his religious office and learning, turned to the study of medicine, and was appointed private physician to Al Fadhel, vizier of Saladin, and soon was recommended to the royal family. An Arabic historian says Maimonides declined a similar position offered by Richard I. of England, then in Palestine. A Moslem theologian came from Spain to Cairo, recognized Maimonides, accused him of being 'a relapse,' but the vizier protected him, and refused to have 'this wise man' tried as 'a relapse.' Maimonides's importance for the religion and science of Judaism, and his influence on their development, is so great that he has often been placed second to Moses. He brought order into those boundless receptacles of tradition, and the discussions and decisions to which they had given rise, which, utterly without system, lie scattered through the works of Haggada and Halakah—Midrash, Mishnah, Talmuds. With the spirit of lucid Greek speculation, and the precision of logical thought of the Arabic Peripatetics, Maimonides, aided by an enormous knowledge, became the founder of a rational, or rationalistic, Scriptural exegesis. The Bible, and all its written and implied precepts, he endeavored to explain by the light of reason.

According to Maimonides contradiction cannot exist between the truths which God has revealed and the truths which the human mind, a power derived from God, has discovered. The miracles themselves, though not always traceable to their immediate cause, yet cannot be wrought in opposition to the physical and everlasting laws in nature. Where literal interpretation seems to lessen the reverential awe due to the Highest Being, there an allegorical explanation is to be adopted unhesitatingly. Maimonides's philosophical system has similarity with that of Averroes; both drawing from the same classical sources, and arriving independently with individual modifications, to nearly the same views on the great problems of the universe. Exalting man's reason, when tutored by divine revelation, Maimonides fully allows the freedom of will, and condemns a life of idle asceticism and dreamy, albeit pious contemplation. Providence, Maimonides holds, reigns in a broad manner over humanity, swaying the destinies of nations; but

he denies its working in the single event that may befall the individual, who, subject to the great physical laws, must learn to obey them. The soul, and the soul only, is immortal, and the reward of virtue consists in its—strictly unbodily—bliss in a world to come; while the punishment of vice is the 'loss of the soul.'

Maimonides's first work of paramount import begun in his 23d year, and finished ten years later, is his Arabic commentary of the Mishnah (afterward translated into Hebrew), which forms a historical introduction to *Tradition*, or the Oral Law: this introduction has for more than 500 years been deemed so essential a part of the Talmud itself that no edition is considered complete without it. This was followed by the *Sefer Ha-Mizwot*, or Book of the Precepts, in Arabic (translated into Hebrew), which contains among other matters the 13 articles of belief, recited as the creed in the Jewish ritual. A gigantic work followed 1180, under the title *Mishneh Tdelorah* (Second Law), or *Yad La-Hazakah* (Strong Hand), a Hebrew compendium in 982 chapters, comprising the entire Halakah, and which, with astounding minuteness, lucidity and precision systematically arranges the results of the legal disquisitions gathered from the Talmudical labyrinths. Maimonides reached his highest renown in his great Arabic work, *Dalalat Al-Hairin* (Heb. Moreh Nebuchim, 'Guide of the Erring'), a philosophical exegesis (translated into Hebrew; ed. in the original by Munk, 1856-66), which has contributed more than any other work to the rational development of Judaism, and has occasioned a long and bitter fight between orthodoxy and science—carrying out, as it did, to its last consequences the broad principle, that 'the Bible must be explained metaphorically by established fundamental truths in accordance with rational conclusions.' So bitter grew the contest in Spain and France between the subsequent spiritualistic Maimonidian and the 'literal Talmudistic' schools, that finally, about the middle of the 13th century, the decision was transferred into the hands of the Christian authorities, who began by burning Maimonides's books, continued by bringing to the fire all Hebrew books on which they could lay hands, and followed by a slaughter of thousands on thousands of Jews, men, women, and children, irrespective of their philosophical views. Under these circumstances, the antagonistic parties, chiefly through the influence of David Kimchi and others, came to a reconciliation, and withdrew their mutual anathemas; and, as time wore on, Maimonides's name became the pride and glory of the nation, who bestowed on him terms like the 'Great Eagle,' the 'Light of Two Worlds,' etc. Moreover, as early as the 13th century, portions of his works, chiefly the *Moreh* (Doctor Perplexorum) became, in Latin versions, textbooks in European Christian universities.

Maimonides witnessed only the beginning of the con-

flict whose proportions and violence he certainly never anticipated. At his death, at Cairo, grief at the loss of the 'Light of the Age' was widespread in the East and the West.—See *The Guide of the Perplexed of Maimonides*, translated and annotated by Dr. Friedländer (3 vols. 1886); also the life of Maimonides by Friedländer.

MAIN, a. *mān* [Goth. *magan*, to be able: Icel. *mega*, to be able; *megin*, strength, the principal part of a thing]: chief; principal; first, as in size, rank, or importance; leading; important; in *OE.*, mighty; huge; vast; containing the chief part; forcible: N. the gross bulk or whole; violence, force, strength, or effort, as, he fought with might and *main;* the greater part; the ocean or sea; a continent or large island as distinguished from adjoining islands; a chief drain or pipe. MAIN'LY, ad. *-lĭ*, chiefly; principally. MAIN BODY, the part of an army between the advance and rear guards. MAIN CHANCE, the best sort of profit or advantage; a constant attention to one's own interest. MAIN-DECK, the principal deck of a ship. MAIN-KEEL, the keel as distinguished from the false keel. MAINLAND, n. *mān'lănd*, the continent; the principal land as opposed to an island. MAIN'-MAST, n. principal or middle mast in a ship (*main* is applied similarly to all the parts belonging or adjacent to this mast. MAIN'SAIL, n. the principal sail in a ship. MAIN-SHEETS, the ropes used for fastening the mainsails. MAINSPRING, n. the moving spring in a timepiece. MAIN-STAY, n. *mān'stā*, chief support. MAIN-TOP, a platform over the head of the mainmast. MAIN-YARD, the yard on which the mainsail is extended. IN THE MAIN, for the most part; on the whole.—SYN. of 'main, a.': head; capital; cardinal; mighty; first; absolute.

MAIN, n. *mān* [F. *main*, hand]: in *OE.*, a hand or throw at dice; a cock-fighting match.

MAIN: river of Germany, largest affluent of the Rhine from the right; formed by union of two branches, the White and Red Main, 4 m. below Kulmbach, in Bavaria. The more important of these, the White Main, rises in the Fichtelgebirge, 2,800 ft. above sea-level. The Main has a winding westward course 300 m. to the Rhine, into which it falls at Mainz. It is navigable for the last 220 m. The principal towns on its banks are Schweinfurt, Würzburg, Aschaffenburg, Offenbach, and Frankfurt; and its chief affluents are, on the right, the Saale, and on the left, the Regnitz. The Main is one of the most picturesque of German rivers; it flows through a beautiful country, where the hill-slopes are frequently covered with vineyards, and surmounted by castles. Its waters communicate with those of the Danube by means of the Ludwigs-Kanal. Recently great improvements have been made in deepening the river by dredging out the shallow places, so that the largest Rhine steamers can ascend to Frankfort. See BAVARIA.

Area in Square Miles, 29,895
Number of Counties, 16
Population, 694,466
Capital of State, Augusta
MAINE
SCALE OF MILES
0 10 20 30 40 50 60
ATLANTIC OCEAN
BORMAY ENGRAVING CO., N.Y.

MAINE, *mān:* a state; one of the United States of America; 10th in order of admission into the Union, 1st in granite product, 3d in buckwheat, 11th in potatoes, and 24th in value of manufactures; known colloquially as the 'Pine Tree State.'

Location and Area.—M. is in lat. 43° 04′—47° 31′ n., long. 66° 45′—71° 06′ w.; bounded n. by the provinces of Quebec and New Brunswick, Canada; e. by New Brunswick, s. by the Atlantic Ocean, w. by N. H.; extreme length 320 m., greatest breadth 210 m.; 33,040 sq.m. (21,145,600 acres); elevation 300–5,385 ft.; sea coast 2,486 m.; river and lake area 3,200 sq.m.; cap. Augusta.

Topography.—The surface slopes from the interior toward the n. to the valley of St. John river, where it is about 300 ft. above sea-level, and toward the s. and s.w. to the ocean, where it is low, level, and in some places marshy, though the shores are in parts rocky. The Appalachian chain enters M. from New Brunswick at Mars Hill, and after traversing it s.w. becomes a part of the White Mountain system at the N. H. line. The principal elevations are Mt. Katahdin, in Piscataquis co., 5,385 ft.; Mt. Abraham, 3,400, and Mt. Blue, 2,800, in Franklin co.; Mars Hill in Aroostook co., 2,000; Mts. Mattatuck, Puzzle, Saddleback, Bigelow, and Agamenticus; the Camden Hills; Bald Mountain; and a number of peaks on Mount Desert Island. The largest river is the Penobscot, which, with branches and connecting lakes, drains the centre of the state, and is navigable 55 m. from its mouth. The Kennebec drains the w., and is navigable for ships 12 m. and smaller boats 50 m. from its mouth. Between the Kennebec and the w. boundary are the Androscoggin and Saco rivers, the Piscataqua forms the s.w. boundary, the St. Croix a portion of the e., and the St. John the greater part of the n. boundary. Along the sea-coast are 17 large bays, chief of which are Passamaquoddy, Machias, Little Machias, Englishman's, Narraguagus, Frenchman's, Penobscot, Belfast, Muscongus, Damariscotta, Sheepscott, Quohog, Casco, Saco, and Piscatauqua. Among the numerous islands between Quoddy head and Kittery point are Mt. Desert, w. of Frenchman's Bay (area 60,000 acres), with 13 peaks, the highest 1,800 ft.; Isle au Haute, near the entrance to Penobscot Bay; Deer, Long, and Fox, in that bay; and the Isles of Shoals group, part of which belong to N. H. M is thickly studded with clusters of connected lakes and many isolated ones; the largest, Moosehead, is 35 m. long, and 4–12 m. wide. The Androscoggin river drains the Umbagog chain, the Presumpscut river the Sebago and surrounding lakes, the Kennebec river the Moosehead cluster, and the Saco river more than a dozen small ones. In the n. are nearly 100 lakes and large ponds drained by St. John river and its numerous tributaries; and the Penobscot, which drains nearly one-third the area of the state, takes, with its branches, the surplus water of more than 50 large lakes and ponds.

Climate.—The winters are severe, but without violent

changes; summers short and hot. Snow lies on the coast 3½–5 months, in the interior 4½–6 months. Fogs and n.e. winds from the Atlantic in the spring and early summer produce considerable pulmonary distress along the coast. The temperature ranges from 20° below to 100° above zero through the year. At Portland (lat. 43° 40′ n., long. 70° 14′ w.) it has averaged 23°–38° in winter, and 63°–69° in summer, with annual mean barometer 29·963, thermometer 43·90, rainfall 42·32 inches, prevailing wind s.w. The average rainfall in the state is 34·46–45·25 inches.

Geology.—The surface strata are chiefly of primitive formation, with Silurian rocks in the n. and n.e., and Devonian overlying the Silurian in the n. Bowlders, sand, and gravel of the drift formation are found everywhere, and along the s. the drift has a sub-stratum of tertiary clays. Granite abounds at Hallowell, Bath, Thomaston, Dix Island, and elsewhere; ornamental red granite at Calais; argillaceous slates and limestones through the n.; tourmalines at Paris; garnets at Parsonsfield and Phippsburg; felspar at Brunswick and Topsham; beryls at Bowdoinham; iron ore of excellent quality near Mt. Katahdin; slate for roofs, tables, blackboards, and writing slates in a belt between the Kennebec and Penobscot rivers; red sandstone along the shore of Passamaquoddy Bay; and red hematite along the Aroostook river. The granite and limestone of M. are greatly esteemed through the United States for their superiority as building stones. Lead, tin, copper, zinc, and manganese are found in various localities, and veins of silver-bearing galena have been discovered on Campbell's Island and on the shore of Cobscook Bay. The soil is very fertile in the river valleys, especially between the Penobscot and Kennebec and along the St. John; but along the sea coast and in the mountainous districts it is too sterile to repay cultivation. The central and n. portions of the state are covered with forests, in which pine, spruce, hemlock, maple, birch, beech, ash, and white and red oak predominate; cedar is found in the n. swamps; and poplar, elm, basswood, dogwood, juniper, pine, buttonwood, alder, and willow in the s. forests. The most thrifty fruits are cherry, plum, pear, and apple.

Zoology.—M. is now the sole home in the United States of the American elk, locally known as the moose and caribou. It abounds in the dense n. and central forests, and is hunted with a difficulty that gives zest to the sport. Other animals found in large numbers in these forests are black bear, deer, wolf, catamount, wild cat, badger, wolverine, marten, sable, weasel, mink, raccoon, porcupine, rabbit, woodchuck, and squirrel. The bays, lakes, ponds and rivers, in proper season, are the resort of wild geese, ducks, brant, and teal, and are well-supplied with cod, herring, menhaden, mackerel, salmon, trout, pickerel, and lobsters. Eagles, hawks, owls, crows, partridges, quail, wild pigeons, robins, and humming birds are plentiful through the state, and sea-gulls and fish-hawks along the coast.

Fisheries.—The sea and shore fisheries of M. constitute one of her chief industries, and during the year give employment to no less than 16,000 persons. The catch during the year is about 225,000,000 lbs., valued at $4,200,000. The most important fishery in value of product is the lobster fishery, which, in the course of a year, amount in volume to 7,425,298 lobsters, valued at $1,500,000. The propagation of lobsters is being carried on both by the State and Federal authorities; during 1910, 90,000,000 lobster fry were hatched and liberated along the coast of M. by the U. S. hatchery at Boothbay Harbor. Some of the varieties of fresh water fish are the speckled trout, sturgeon, pickerel, salmon, bass and bream. Lobsters, clams and mussels are in large quantities on the coast waters, and in the bays and inlets are bluefish, rock-cod, sculpins, cunners, flounders, and some others. In the off-shore waters there are cod, herring, mackerel, haddock, hake, porgy, menhaden, and pollock, which are caught in large quantities. One species of herring, the *Culpea harengus,* furnishes a large portion of the fish used in the sardine-canning establishments of Lubec, Eastport, and other places. Herring constitutes the greatest portion of the fishery product next to lobsters, the catch aggregating about 150,000,000 lbs. Other large catches are groundfish, 55,000,000 lbs.; clams and scallops, 6,000,000 lbs.; mackerel, 1,000,000 lbs.; alewife, 2,000,000 lbs.; and smelts, 775,000 lbs.

Mining and Quarrying.—Granite constitutes the chief wealth producing mineral in the State, the annual production being valued at about $2,700,000, placing M. first among the States in the production of that mineral. Next in importance is limestone to the value of $715,272. Of slate the production is valued at $202,325. The other minerals are of less importance. According to latest statistics there were 135 mines and quarries in the State employing 3,684 wage earners, whose wages aggregated $2,284,789, and the value of the product was $3,656,734.

Agriculture.—Owing to the large acreage of forest land, not much more than one-third of the State is suitable for farming, and of that about 33 per cent. is unimproved. Comparatively few of the farms are occupied by tenants, while none of them can compare in size with the farms of the Western States. Altogether there are about 60,000 farms, comprising a total of about 6,500,000 acres. The total value of all farm property, including lands, buildings and improvements, implements and machinery, and live stock, is something over $135,000,000. The cereal crops (especially wheat) have decreased in extent, owing to Western competition; yellow corn is now grown almost exclusively for fodder; and in none of its crops can M. compare with the great agricultural States of the West. The finest sweet corn in the world for canning is raised here, however; the potato crop is more valuable than all the cereal crops of the State combined, while good returns are secured from the hay and buckwheat crops.

Manufactures.—There are about 3,200 manufacturing establishments in M., whose total output is worth approximately $150,000,000 a year. The principal industries are textiles; paper and wood pulp; lumber and timber products; canning and preserving fish; boots and shoes; foundry and machine-shop products; flour and grist-mill products; printing and publishing; leather, tanned, curried and finished; lumber, planing-mill products, including sash, doors, and blinds; and marble and stone work. Shipbuilding was once extensively pursued, Bath being the centre of that industry in the United States for more than 100 years, but within the last decade this industry has declined rapidly.

Commerce and Transportation.—The total annual imports of M. amount to about $4,000,000, and the exports to about $17,000,000. Of M.'s many ports, Portland and Bangor are the most important. The chief steamship lines running from M. ports are the Eastern Steamship Co., with its 6 divisions, the M. Steamship Co., plying between Portland and New York, and the lines operated by the M. Central R. R. on Frenchman's Bay and Mt. Desert Ferry, and other points connecting with this railroad. The Allan, Dominion, Bristol, and Thompson lines also run from Portland to England during the winter months. There are about 20 railroads operating in the State, of which the M. Central, the Boston & M., and the Canadian Pacific are of most importance. Altogether there is a total mileage of 2,300 miles, besides approximately 400 miles of street railway.

Finance and Banking.—The total assessed valuation of all property, both personal and realty, is $428,212,465, the tax rate $2.08 per $1,000, and the bonded debt $698,000. There are more than 80 national banks; 50 savings banks, and 30 loan and trust companies.

Education.—M. spends nearly $2,500,000 a year in the maintenance of its public schools, in which there are almost 150,000 pupils enrolled, with nearly 7,000 teachers. The State also supports four normal schools and one training school, besides aiding free high schools and academies supplying similar courses, of which there are about 35. There are also colleges and universities, and schools of law, medicine, theology, and technology. The most prominent institutions of higher education in the State are the University of M., Bowdoin College, and Bates College.

Religion.—The strongest denominations are the Roman Catholic, Congregational, Baptist, Methodist Episcopal, Free Baptist, and Protestant Episcopal.

Charitable and Penal Institutions.—M. has 45 institutions of charitable or benevolent nature, as follows. M. Children's Home, Augusta; Bangor Children's Home, Bath Military and Naval Orphans Asylums; Girl's Home, Belfast; House of the Good Shepherd, Gardiner; Goodwin Farm for Boys, Healy Asylum for Boys, Lewis-

ton; Female Orphan Asylum, M. Home for Friendless Boys and St. Elizabeth Orphan Asylum at Portland; Auburn Home for Aged Women; St Mark's Home, Augusta; Homes for Aged Men and for Aged Women at Bangor; Homes for Aged Couples and Old Men and for Old Ladies at Bath; Lewiston Home for Aged Men, Norway Home for Aged Men, Homes for Aged Men and for Aged Women and St. Joseph's Home and Hospital at Portland; Home for Aged Women at Rockland; Wardell Home for Old Ladies at Saco; National Home for Disabled Vol. Soldiers, Togus; Catherine Morrison Home, Auburn; Deaconess' Home, Bangor; King's Daughters' Home, Lewiston; Mary Brown Home, Temporary Home for Women and Children and Deaconess' Home at Portland; the M. School for the Deaf, Portland; M. Insane Hospital at Augusta; Eastern M. Insane Hospital at Bangor; and 12 hospitals and dispensaries, the largest of which are the M. General at Portland, the Eastern M. at Bangor, the Sisters' at Lewiston, the Central M. at Lewiston and the M. Eye and Ear Infirmary at Portland. The penal institutions comprise—the State prison at Thomaston, the State Industrial School for Girls at Hallowell, the State Reform School about two miles from Portland, and the county jails in each county except Sagadahoc.

History.—The coast of M. was visited by the Northmen probably about 990, Cabot 1498, Verazzano 1524, Gomez 1525, Rut 1527, André Thevet 1556, Gosnold 1602, Pring 1603, and Du Mont, who attempted to establish a French settlement on St. Croix river 1604, and took possession of the shores of the Kennebec 1605. In the latter year Capt. George Weymouth explored the neighborhood of St. George river, and on his reports the Plymouth Company obtained a grant which included the present state, and sent an expedition to possess it 1607. This attempt to colonize failed. In 1607, George Popham, with two ships and 100 men from England, came to the mouth of the Kennebec, and built a storehouse and a fort; but Popham died the next year; and the colonists, discouraged by the severe winter, abandoned the settlement and returned to England. Du Mont having transferred his patent to Mme. de Guercheville, that lady fitted out another French expedition chiefly for missionary purposes, which landed at Mount Desert 1613, but was soon afterward dispersed by order of the Va. authorities. In 1614 Capt. John Smith took possession of Monhegan Island, established trade with the Indians on the Kennebec river, and explored much of the coast. Six years afterward the Plymouth Company received a new grant comprising all the country between lat 40° and 48° n., the Va. Company being assigned all territory s. of the first patent. In1622 Sir Ferdinando Gorges and Capt. John Mason were granted by the Plymouth Company the territory between the Merrimack and Kennebec rivers, and established the first permanent mainland set-

tlement at the mouth of Piscataqua river 1623. Settlements were made at Monhegan and Saco about the same time. Between 1629-35 the Plymouth Company disposed of large tracts by grants, and prior to surrendering its charter to the English govt. divided the remainder among its members. In this distribution Gorges received the country between the Piscataqua and Kennebec rivers, and this grant was confirmed by the king 1639. Gorges organized a govt. which continued till 1677, when his heirs sold their interests to the Mass colony. In the mean time Mass. claimed the territory; the transfer of Acadia to France was annulled and the territory was returned to France by treaty; the Dutch attempted to colonize the coast, conquered that part belonging to Nova Scotia and Acadia 1674, and were expelled by an expedition from Boston 1676; King Philip began his terrible Indian war 1675; and Charles II. granted the Kennebec-Penobscot tract to his brother James, Duke of York (see JAMES II.). In 1686 this territory was transferred to Mass., and the history of M. 1688-1820 is a part of that of Mass., which gave up claim to Nova Scotia, and had all the remainder of the territory in dispute secured to her by the treaty of 1783. After the close of the King Philip war, the remaining settlements were kept in a state of terror many years by the Abnaki group of Indians. During the revolutionary war Machias, Portland, Castine and the Kennebec valley were the scenes of important events.

Agitation for the separation of the 'district of Maine' from Mass. began immediately after the peace with England. Many conventions were held 1784-91 to formulate amicable measures for separation. The difficulties between the state and its 'district' were intensified by the dispute between the United States and Great Britain concerning the boundary between M. and the British possessions, and it was not till 1819 that the local difficulties were adjusted, and Mass. gave its consent to the long-sought separation. M. suffered severely during the second war with England, had its vast shipping interests almost wholly destroyed, and during the greater part of the war much of its territory was in possession of the British. By act of congress the district of M. was admitted into the union on the same terms as the original states 1820, Mar. 15; and by the Webster-Ashburton treaty 1842 a large tract in the n. part of M. was ceded to Great Britain in return for slight additions to N. H. and Vt. and the right of free navigation of St. John river, and the great boundary dispute thus definitely settled. M. has a law prohibiting the sale of intoxicating liquors as a beverage; this law was the first of its kind adopted in the United States (see DOW, NEAL). During the civil war M. contributed to the Union army 31 regts. of inf., 3 of cav., and numerous companies of artil. and sharp-shooters, aggregating 70,107 men. The chief event of recent years was the insertion of the prohibitory

clause in the constitution in 1884, penalizing the manufacture and sale of intoxicatng liquors not including cider except for medicinal and mechanical purposes and the arts.

Government.—The executive authority is vested by the constitution in a gov., elected for two years. The gov. is assisted by a council of seven members elected biennially on a general ballot of the legislature. The gov. nominates, and with the advice and consent of the council appoints all judicial officers except the judges of probate, coroners, notaries public, and all other officers whose appointments are not provided for by law He has power to grant reprieves, commutations, and pardons, except in case of impeachment, and also to remit forfeitures and penalties, all of these with the advice and consent of the council. In case of vacancy in the gov.'s office, he is succeeded by the pres. of the senate, and speaker of the house respectively. The Secy. of State and State Treas. are elected on general ballot for two years, the attorney-general on joint ballot of the legislature for the same term. The legislature is composed of a senate of 31 members and a house of representatives of 151 members, both elected biennially on the 2d Monday in September. They meet in session the 1st Wednesday in January next following their election. The legislature may override the gov.'s veto by a two-thirds vote of both Senate and House. The judiciary consists of a Supreme Judicial Court composed of a chief justice and seven associate justices, appointed by the gov. and council for seven years. Cumberland and Kennebec cos. have Superior Courts, the judges of which are also appointed by the gov. and council for seven years. There are also in nearly all cities municipal and police courts, the judges of which are appointed by the gov. and council for four years. The successive govs., with their terms of service since the admission of the state into the union, are as follows: William King 1820-21; W. D. Williamson (act'g) 1821-2; Albion K. Parris 1822-7; Enoch Lincoln 1827-29; Nathan Cutler (act'g) 1829-30; Jonathan D. Hunton 1830-31; Samuel E. Smith 1831-34; Robert P. Dunlap 1834-38; Edward Kent 1838-9; John Fairfield 1839-40; Edward Kent 1840-41; John Fairfield 1841-43; E. Kavanagh (act'g) 1843-44; Hugh J. Anderson 1844-47; John W. Dana 1847-50; John Hubbard 1850-53; W. G. Crosby 1853-55; Anson P. Morrill 1855-6; Samuel Wells 1856-57; Hannibal Hamlin 1857; J. H. Williams (act'g) 1857-58; Lot M. Morril 1858-61; Israel Washburn, Jr. 1861-63; Abner Coburn 1863-64; Samuel Cony 1864-67; Joshua L. Chamberlain 1867-71; Sidney Perham 1871-74; Nelson Dingley, Jr. 1874-76; Selden Connor 1876-79; Alonzo Garcelon 1879-80; Daniel F. Davis 1880-81; Harris M. Plaisted 1881-83; Frederick Robie 1883-87; Joseph R. Bodwell 1887-89; Edwin C. Burleigh 1889-93; Henry B. Cleaves 1893-97; Llewellyn Powers 1897-1901; John F. Hill 1901-05; William T. Cobb 1905-07; B. M. Fernald 1907-9; Frederick W. Plaisted, 1909—.

Politics.—State elections are held second Monday in Sept., congressional and presidential Tuesday after first Monday in Nov. Paupers, persons under guardianship, and Indians not taxed are excluded from voting. M. has two United States Senators and four Representatives in Congress and 6 electoral votes. Her votes for pres. and vice-pres. have been as follows: 1820, James Monroe and Daniel D. Tompkins 9; 1824, John Adams and John C. Calhoun; 1828, Andrew Jackson 1, John Q. Adams 8 for pres., John C. Calhoun 1. Richard Rush 8 for vice-pres.; 1832, Andrew Jackson and Martin Van Buren 10; 1836, Martin Van Buren and Richard M. Johnson; 1840, William Henry Harrison and John Tyler; 1844, James K. Polk and George M. Dallas 9; 1848, Lewis Cass and William O. Butler; 1852, Franklin Pierce and William R. King 8; 1856, John C. Fremont and William L. Dayton; 1860, Abraham Lincoln and Hannibal Hamlin; 1864, Abraham Lincoln and Andrew Johnson 7; 1868, U. S. Grant and Schuyler Colfax; 1872, U. S. Grant and Henry Wilson; 1876, Rutherford B. Hayes and William A. Wheeler; 1880, James A. Garfield and Chester A. Arthur; 1884, James G. Blaine and John A. Logan 6; 1888, Benjamin Harrison and Levi P. Morton; 1892, Benjamin Harrison and Whitelaw Reid; 1896, William McKinley and Garret A. Hobart; 1900, William McKinley and Theodore Roosevelt; 1904, Theodore Roosevelt and Charles W. Fairbanks.

Counties, Cities and Towns.—M. is divided into 16 counties, as follows: Androscoggin, Aroostook, Cumberland, Franklin, Hancock, Kennebec, Knox, Lincoln, Oxford, Penobscot, Piscataquis, Sagadahoc, Somerset, Waldo, Washington, York. The chief cities are Portland, pop. 50,145; Lewiston, 23,761; Bangor, 21,850; Biddeford 16,145; Auburn, 12,951; Augusta (capital) 11,683; Bath, 10,477; Saco, 6,122.

Population.—(1790) 96,540; (1800) 151,719; (1810) 228,705; (1820) 298,269; (1830) 399,455; (1840) 501,793; (1850) 583,169; (1860) 628,279; (1880) 648,936; (1890) 661,086; (1900) 694,466; (1910) 742,371.

MAINE, University of, a coeducational institution located at Orono, Maine, and established in 1862 by the Act of Congress known as the Morrill Act. There are 23 departments in which instruction is given, divided into colleges of Arts and Sciences, Agriculture, Technology, Pharmacy, and Law. The degree of B.A. is given for the completion of such courses in the College of Arts and Sciences as contain a minimum of one year of Latin. The degree of B.S. is given for all other courses in the Colleges of Arts and Sciences, of Agriculture, Technology, and Pharmacy. The degree of LL.B. is given graduates of the College of Law, which is located at Bangor. In 1905 there were 70 professors and instructors, 604 students, and the library contained about 28,000 volumes.

MAINE, *mān:* one of the anc. provinces of France, immediately s. of Normandy, corresponding to the modern depts. of Sarthe and Mayenne. Its chief town was Le Mans, now cap. of the dept. of Sarthe.

MAINE, Sir Henry James Sumner, ll.d.: 1822–1888, Feb. 4; b. England: lawyer. He graduated at Pembroke College, Cambridge, England, 1844; was tutor there two years; Regius prof. of civil law 1847–54; reader on jurisprudence at the Middle Temple 1854–62; law member of the supreme govt. in India 1862–69; was elected Corpus prof. of jurisprudence in Oxford Univ. 1870; appointed member of the council of the sec. of state for India and knighted 1871; elected foreign associate of the French Acad. of Moral and Political Sciences, succeeding Ralph Waldo Emerson, 1883; and was offered and declined the office of permanent under-sec. of state at the home office. His publications comprise *Roman Law* (1856); *Ancient Law* (1861); *The Effects of Observation of India on Modern European Thought* (1875); *Lectures on the Early History of Institutions* (1875); *Modern Theories of Succession to Property after Death, and the Correction of Them, suggested by Recent Researches* (1878); *Dissertations on Early Law and Custom* (1883); and *Popular Government* (1885).

MAINE DE BIRAN, *mān dĕh bē-rŏng′*, François-Pierre-Gonthier: philosopher: 1766, Nov. 29—1824, July 16; b. Bergerac. Driven into retirement by the horrors of the Revolution, he became a student of psychology, to which he brought an acute and subtle mind. The influence of his views can be traced in the best recent psychological works by French writers.

MAINE-ET-LOIRE, *mān-ā-lwâr′:* inland dept. of France, a portion of the lower basin of the Loire; 2,745 English sq. m. Of about 1,000,000 arable acres, near 200,000 are in meadow, and 95,000 in vineyards. The soil is fertile. Wines, red and white, are extensively produced. Iron and coal mines are worked; and there are mills for cotton, woolen, and linen. Cap. Angers.—Pop. (1881) 523,491; (1891) 518,589; (1901) 514,658.

MAINE LIQUOR LAW: see Temperance: Total Abstinence: etc.

MAINOTES, *mī′nōts:* inhabitants of the mountainous dist. of Maina, in the Greek province of Laconia. They claim to be descendants of the ancient Spartans, whose land they occupy. They are a wild and brave race. While the Turks held possession of Greece, the M. were almost independent, and were prominent in the war for the liberation of Greece.

MAINPERNOR, n. *mān′pėr-nėr* [F. *main*, hand, and OF. *perner;* F. *prendre*, to take; *prise*, a taking: L. *prehendĕrĕ*, to take]: in *law*, a surety into whose hands a person charged with an offense was given to answer for his appearance when required. Main′prise, n. *-prīz:* see Mainprize.

MAIN'PRIZE, in English Law [see MAINPERNOR]: formerly a security by which the bailor or mainpernor took the party bailed under his own personal charge or friendly custody, giving security to produce him at the time appointed: the practice is now obsolete, and superseded by Bail (q.v.).

MAINS, n. plu. *mānz* [Norm. F. *manse;* mid. L. *mansus*, a country-house to which is attached a certain quantity of land: O.Scot. *manys*, a mansion, a palace (see MANSE)]: in *Scot.*, the farm attached to a mansion-house; a large farm with buildings of a superior class.

MAINTAIN, v. *mān-tān'* [F. *maintenir*, to maintain—from *main*, hand; *tenir*, to hold: L. *manu tenērĕ*, to hold by the hand]: to hold or preserve in some particular state or condition; to keep up; to defend; to vindicate; to support by argument; to justify; to support with food, clothing, etc.; to support the expense of; to affirm or assert, as an opinion or doctrine. MAINTAIN'ING, imp. MAINTAINED', pp. *-tānd'*. MAINTAIN'ER, n. *-ĕr*, one who. MAINTAIN'ABLE, a. *-ă-bl*, that may be maintained or upheld. MAINTENANCE, n. *mān'tĕn-ăns*, means of support, sustenance; vindication; defense; continuance. In *law*, assistance to another in a suit by one who has no interest in it; illegal succoring of a person, as by lending money to a stranger to carry on a lawsuit. But it is legal for persons whose relationship is recognized by law to give aid to or receive aid from each other; e.g., a father may aid his son, a landlord his tenant. A lawyer may give professional but not pecuniary aid. The laws against maintenance are not now so strict as of old; e.g., a contract between lawyer and client to share the sum recovered in a suit now holds good. See CHAMPERTY, or CHAMPARTY.—SYN. of 'maintain': to assert; allege; support; sustain; hold; keep; keep up; uphold; continue; preserve.

MAIN'TENANCE, CAP OF (sometimes called *Cap of Dignity*): cap of crimson velvet lined with ermine, with two points turned to the back, originally worn only by dukes, but afterward assigned to various families of distinction.

Cap of Maintenance.

Those families who are entitled to a cap of maintenance place their crests on it instead of on a wreath. According to Sir John Fearne, 'the wearing of the cap had a beginning from the duke or general of an army, who, having gotten victory, caused the chiefest of the subdued enemies whom he led to follow him in his triumph, bearing his hat or cap after him, in token of subjection and captivity.' Most of the reigning dukes of Germany, and various families belonging to the peerage both of England and of Scotland, bear their crests on a cap of maintenance.

MAINTENON, *măng-tĕh-nōng'*, Françoise d'Aubigné, Marquise de: 1635, Nov. 27—1719, Apr. 15; b. in a prison at Niort (her father being a Huguenot); daughter of Constant d'Aubigné and of Jeanne de Cardillac, and grand-daughter of Théodore Agrippa d'Aubigné, well-known for his writings, his attachment to Protestantism, and his energetic character. On obtaining his release, he went (1639) with his wife and daughter to Martinique in the W. Indies, where he died in poverty 1645. After her father's death, Françoise returned, with her mother, a fervent Rom. Catholic, to France; and her mother in her poverty yielded the child to her husband's sister, who converted her to Protestantism; whereupon an order of state issued, committing her to the charge of her god-mother. All means were used—even personal indignity—for her re-conversion to the Rom. Cath. religion; and this was accomplished when she was about 14 years of age—after an obstinate resistance, in which the brave little girl, to use her own words, *fatiguait les prêtres la Bible à la main*. It is remarkable what a zealot she afterward became. The Chevalier de Meré, noticing her penniless condition after the death of her mother 1650 (when the small pension, which had been all their support, ceased), introduced her to Scarron (q.v.), the noted wit and the centre of the literary society of the day. He was struck by her beauty, intelligence, and helpless condition, and offered her his hand, or, if she should prefer it, a sum of money sufficient for her entrance into a nunnery. Although Scarron was lame and deformed, she chose to marry him, and went to live in the midst of the refined and intellectual society which frequented the house of the poet. She was his devoted nurse, and an excellent wife for nearly 10 years. On his death, 1660, she was reduced to great poverty, and proposed to go as a governess to Portugal, when Madame de Montespan (q.v.) obtained her a pension from the king. Four years afterward, she was intrusted with the education of the two sons whom Madame de Montespan had borne to Louis XIV., and in this capacity evinced a patient tenderness and sleepless care such as are expected only from a mother; and now becoming acquainted with the king, soon fascinated him, so that he bestowed on her 100,000 livres, with which she bought the estate of Maintenon; and in the course of events she supplanted Madame de Montespan. It is difficult to describe her relation to the king. She was not, it is believed, his *mistress* in the ordinary sense of the term; but from that time to the end of his life, she exercised extraordinary ascendancy over him; and Louis XIV. was privately married to her 1686, Jan., by the abp. of Paris (this *date* is given by Voltaire). She had a passion for being thought 'a mother of the church;' but while she confessed the strength of her desire to Romanize the Huguenots, she earnestly denied that she approved of the detestable *dragonnades*. She was much disliked by the people, but the courtiers sought her favor, and her crea-

tures were made ministers and generals. Her influence was on the side of decency in that wildly dissolute court. The ministers discussed with her the business to be brought before the king, and their conference with him was usually in her presence. She had decisive influence in all details of action and in minor policies; but it is doubtful if large and continuous lines of policy were usually adopted at her behest. In the midst of splendor, and in the possession of great power, she was confessedly very unhappy. She carefully brought up the children of Madame de Montespan; and it was at her instigation that Louis attempted to legitimize them. When he died 1715, she retired to the former Abbey of St. Cyr, which, at her wish, had been changed, 30 years before, into a convent for young ladies, and here she died. She received, to the end of her life, the honors of a king's widow. Her pretended memoirs are spurious, but her *Lettres* (9 vols. Amst. 1756, etc.) are genuine. By far the best edition is that published by M. Lavallée (1854 et seq.), entitled *Œuvres de Mme de Maintenon publiées pour la première fois d'après les Manuscrits et Copies authentiques, avec un Commentaire et des Notes.*

MAINZ, *mīnts*, or MENTZ, *mĕnts* (Fr. MAYENCE, *mâyŏngss'*, anc. *Moguntiacum*): most strongly fortified city in the German empire in 50° n. lat., and 8° 10′ e. long., in one of the most fertile of the wine-bearing districts of Germany; on a gentle slope on the left bank of the Rhine, near the junction of the Main. Pop. (1871,) 53,918, including the garrison; (1900) 84,251. A floating bridge, resting on 49 pontoons, connects M. with the Rhenish village of Castel; as also a handsome railway bridge of iron, finished 1864. The fortifications, extending nearly 10 m., consist of 14 principal, and numerous lesser bastions, in addition to the four forts of Castel, Mars, Montebello, and Petersaue. In accordance with a decree of the Congress of Vienna, M. was surrendered to the grand duchy of Hesse-Darmstadt 1814, on condition that it was to constitute a German federal stronghold, and be garrisoned in common by Austrian, Prussian, and Hessian troops. In 1866, it became a Prussian fortress, and Prussia obtained all the rights that had hitherto belonged to the German Confederation. By the treaty at Versailles, 1870, Nov. 15, the fortress of Mainz was declared an imperial fortress. M., which is one of the most ancient cities of Germany, retains many evidences of mediæval taste, and consists principally of narrow crooked streets; but of late years a new town has sprung up on the site of the ancient Roman city, and numerous sanitary improvements have been effected under joint direction of the grand-ducal and civic authorities. M. has one Prot. and ten Rom. Cath. churches, among the latterof which the most noteworthy are that of St. Ignacius with its beautifully painted roof, and the cathedral, a memorable building, begun 978, six times destroyed by fire or through war, and restored by Napoleon. It has one great tower, 400 ft. in height, and 6 lesser tow-

ers, 14 altars, and 20 minor chapels. Mainz possesses numerous Roman remains, the most remarkable of which are the *Eichelstein*—a mass of stones supposed to be a memorial erected in honor of Drusus—and the ruins of a vast aqueduct at Zalbach. Mainz has a gymnasium, a seminary for priests, a normal school, a picture-gallery, museums, and a public library. The industrial products include artificial pearls, isinglass, tobacco, vinegar, soap, carriages, musical instruments, furniture, and articles in leather. Mainz, from its position, necessarily has a very important transit-trade, both by railway and river steam-navigation; and since the abrogation of many onerous restrictions it has become one of the great internal ports for the corn and wine trade. The history of Mainz connects it with Rome from B.C. 13, when Drusus built on its site the castle of *Maguntiacum;* but it owes its real importance to Charlemagne. It has acquired celebrity as the birthplace of Gutenberg (q.v.). In the 13th century Mainz was head of the confederacy of Rhine cities: 1468 the city was added to the domains of the archbishops of Mainz; and was several times in the possession of France, notably 1801-14.

MAIPURES, or MAYPURES, *mī-pō'rās:* tribe of Indians in S. America, comprising the Maipures proper, Caveres, Guaypunalis, Pareni, Moxos, and other families. They occupied the region of the upper Orinoco and Negro rivers; nearly all were cannibals and constantly at war with each other, and, excepting the Moxos—who had been conquered by a Peruvian inca—resisted civilization.

MAIR, CHARLES: Canadian writer: b. Lanark, Ont., 1840, Sept. 21; d. 1906. He was educated at Queen's University, and engaged in literary work. He suffered hardship and imprisonment during the first Riel rebellion. Among his works are: *Dreamland and Other Poems; Tecumseh:* a drama; *The last Bison; Collected Poems.*

MAISONNEUVE, *mā-zōng-nėv'*, JULES GERMAIN FRANÇOIS: surgeon: b. Nantes, France, 1810. He was educated in Paris; graduated in medicine 1835; was lecturer and surgeon in the Hôtel Dieu, Hôpital Cochin, and Hôpital Pitié; received the cross of the Legion of Honor 1848; attained wide repute for his bold operations and discoveries in surgical science; and published *Le Perioste et ses Maladies* (1839); *De la Coxalgie* (1845); *Sur les Kystes de l'Ovaire* (1848); *Mémoire sur une nouvelle méthode de Catheterisme* (1855); *Clinique chirurgicale,* 2 vols. (1863-4); and *Mémoire sur les Intoxications chirurgieales* (1867).

MAISONNEUVE', PAUL DE CHOMEDEY, Sieur DE: d. 1676, Sept. 9; b. Champagne, France: founder of Montreal. He entered the French army when 13 years old; was sent to Canada in charge of three ship loads of colonists 1641; founded Montreal 1642, May; was appointed its first gov. and held the office till 1644, June; was re-

moved and sent to France through jealousy of his popularity; and was pensioned by the Seminary of Paris.

MAISTRE, *mātr*, JOSEPH, Comte DE: 1754, Apr. 1—1821, Feb. 26; b. Chambéry, of noble French family, which had settled in Savoy. While Savoy was occupied in 1792 by the French, M., who was a member of the senate, withdrew from the country; and when the king of Sardinia, 1799, was compelled to retreat to the island of Sardinia, M. accompanied his court, and 1803 was sent as ambassador to St. Petersburg. In this post he remained until 1817, when he was called to a place in the home government, and resided in Turin till his death. M. was an ardent advocate of legitimacy, and in his later career became the ablest and one of the most eminent writers of the new conservative school in politics and of the ecclesiastical absolutist school in religion. He had profound learning, and high rhetorical power, but his great strength was in his skill for masterly and logical argument. The key to his whole position in philosophy and in sociology was his profound conviction of the indispensable necessity that the pope should be supreme as well over all national churches and all temporal powers as over all individual private judgment. Without this M. could see no possibility of order on earth. He had obtained some reputation as a writer at a very early period. His first work of note, *Considérations sur la France*, appeared 1796. His later works were written either at St. Petersburg or after his return to Turin. They are—*Essai sur le Principe Générateur des Constitutions Politiques* (St. Petersburg 1810); *Du Pape* (Lyon 1821); *De l'Eglise Gallicane* (Paris 1821–2); *Soirées de St. Petersbourg* (2 vols. 1822): and a posthumous work, *Examen de la Philosophie de Bacon* (Paris 1836).—Joseph's younger bro., Comte XAVIER DE M. (1763–1852; b. Chambéry), was a soldier, who rose to be maj.gen. in the Russian service: he was also an elegant writer in light literature. His *Voyage autour de ma Chambre* is much admired; also *Le Lépreux de la Cité d'Aoste.*

MAITLAND, *māt'land:* town of New South Wales, county of Northumberland, on the Hunter river, 95 m. n. of Sydney; 20 m. n.w. of Newcastle, to which it is joined by railway. It is divided by the river into E. and W. Maitland, which are separate municipalities. In either division are handsome banks, churches, and other public buildings. In West M. (much the more populous part of M.) are several coach-building factories, tobacco manufactories, and three mills (including a paper-mill). Good coal abounds in the neighborhood. The district has been called the 'Granary of New South Wales.' Pop. of both divisions (1881) 7,300; (1891) 10,214; (1901) 10,073.

MAITLAND, JOHN, Duke of LAUDERDALE: 1614–1682, Aug. 24; b. at the ancient family seat of Lethington; grandson of John, first Lord Thirlstane (who was bro. of the former secretary of Lethington); and great-grandson of Sir Richard M. He received an excellent education, be-

ing skilled, according to Bp. Burnet, in Latin, Greek, Hebrew, history, and divinity, was carefully trained in Presb. principles, and entered public life as a keen and even fanatical Covenanter. In 1643, he attended the Westminster Assembly of Divines as an elder of the Church of Scotland, and was a party to the surrender of Charles I. to the English army at Newcastle. Soon afterward he changed his politics altogether, and became a decided royalist. When Charles II. came to Scotland from Holland, Lauderdale accompanied him; but was taken prisoner at the battle of Worcester 1651, and was in captivity nine years. Set at liberty by General Monk, he hastened to the Hague 1660, and was warmly received by Charles. After the removal of Middleton 1662, and of Rothes 1667, Lauderdale was practically the sole ruler of Scotland, and for some time showed moderation, and an apparent regard for the religious feelings of his countrymen; but he soon became a bitter persecutor, sent multitudes of the Covenanters 'to glorify God at the Grassmarket,' and repelled in blasphemous language the remonstrances which many distinguished persons ventured to make. In 1672, Charles showed his appreciation of the Earl of Lauderdale's conduct by creating him Marquis of March and Duke of Lauderdale; two years afterward, he was raised to the English peerage as Viscount Petersham and Earl of Guilford, and received a seat in the English privy council. He was one of the famous 'Cabal;' but having, by his domineering arrogance, excited the disgust and hatred of his colleagues, as well as of the nation, he fell into disgrace, and was stripped of all his offices and pensions 1682, the year of his death. Lauderdale, according to Burnet, 'was in his principles much against popery and arbitrary government,' and his infamy consists in his shameless sacrifice of his convictions to his interests. He was a rude, blustering, passionate man, with what the Duke of Buckingham called a 'blundering understanding.' Burnet gives a picture of his appearance: 'He was very big, his hair red, hanging oddly about him. His tongue was too big for his mouth, which made him bedew all that he talked to; and his whole manner was very unfit for a court.'

MAIT'LAND, Sir Richard of Lethington: Scottish lawyer and poet: 1496–1586; the first distinguished member of a family which became celebrated in literary and political history. He studied at St. Andrews and in France, and on his return to Scotland was successively employed by James V., the Regent Arran, and Mary of Lorraine. About 1551–2, he received knighthood, became a lord of the court of session 1561 (before which, however, he had the misfortune to lose his sight), and lord privy seal 1562. M. was one of the best men of his time, conspicuous for moderation and integrity in an age of violence, fanaticism, and perfidy. A complete ed. of M.'s original poems was published first 1830 (1 4to vol.) by the Maitland Club, a soc. of literary antiquaries named from him. His collection of early Scottish poe-

try (in two MS. vols., the first containing 176, and the second 96 pieces) is preserved in the Pepysian Library, Magdalene College, Oxford.

MAITLAND, WILLIAM: better known as 'Secretary Lethington,' about 1525–1573, June 9; eldest son of Sir Richard M. of Lethington. Like his father, he was educated both at St. Andrews and on the continent. He became a convert to the Reformed doctrines about 1555, but could not have been a violent partisan, since in 1558 he was appointed sec. of state by Mary of Guise. In the following year, however, he openly joined the lords of the congregation, and was one of the Scotch commissioners who met the Duke of Norfolk at Berwick, to arrange the conditions on which Queen Elizabeth would give them assistance. In 1561, after the arrival of Queen Mary from France, he was made an extraordinary lord of session. He strongly objected to the ratification of Knox's *Book of Discipline*, and 1563 conducted the prosecution against Knox for treason; from this time appearing to have left the Reformers. In 1564, he held a long debate with Knox on the claims of the Reformed Church to be independent of the state. In 1566 he took part in the conspiracy against Riccio, after whose assassination he was proscribed, and obliged to seek shelter in obscurity. He was, it is believed, cognizant of Bothwell's scheme for the murder of Darnley; yet, when he saw the hopeless nature of Bothwell's designs, he immediately joined the confederacy of the lords. While Mary was still a prisoner at Loch Leven, he is said to have written to her, offering his services, yet he was present at the coronation of King James VI., 1567; and though he secretly aided in the escape of the queen, he fought against her on the field of Langside. In 1568 he accompanied the Regent Moray to the conferences held at York regarding the Scottish queen; but even here he tried to further her interests, and is said to have been the first to propose to the Duke of Norfolk a union between him and Mary. The Scottish lords now felt that he was a dangerous enemy to the commonwealth, and 1569 he was arrested at Stirling, but was soon liberated by an artifice of Kirkaldy of Grange. After the murder of the Regent Moray, he and Kirkaldy became the forlorn hope of the captive queen, in consequence of which he was declared a rebel, deprived of his offices and lands by the Regent Morton, and besieged with Kirkaldy in Edinburgh Castle, by the regent and an English force. After long resistance, the castle surrendered; Kirkaldy was put to death, and M. died a prisoner at Leith, 'some,' says Melville, 'supposing he took a [poison] drink and died, as the auld Romans were wont to do.' Buchanan has drawn his character with a severe pen in his Scottish tract *The Chameleon*.

MAITREYA: according to the Buddhists, a Bodhisattwa, or a man of pre-eminent virtue and sanctity; disciple of the Buddha Śâkyamuni. He is classed in their mythology among the gods called Tushitas, or 'the

happy,' and has generally the epithet *Ajita*, or 'unconquered.' The Buddhists believe that he will become incarnate as their future Buddha. In Tibetan, he is called Jampa. A faithful representation of this Buddha, surrounded by the (Tibetan) goddesses Dolma, the Mantas or Buddhas of medicine, two ancient priests, and various saints, is in the atlas of Emil Schlagintweit's *Buddhism in Tibet* (London and Leipzig 1863), where an interesting sketch is given (p. 207, ff.) of the characteristic types of Buddha images, and of the measurements of Buddha statues by the author's brothers in India and Tibet.

MAIZE, *māz:* see MAZE 2 for the correct spelling.

MAIZE, n. *māz* [Sp. *maiz;* F. *mais*—from *mahiz*, native word of the island of Hayti]: Indian corn, an Amer. corn-plant, the *Zēă mays*, ord. *Gramĭnĕæ:* name also of a genus of grasses, having monœcious flowers; the male flowers forming a loose panicle at the top of the culm; the female flowers in axillary spikes, inclosed in large tough spathes, from which only the extremely long styles—in the common species 6–8 inches long—hang out like tufts of feathers or silken tassels. The grains are large, roundish, compressed, naked, and arranged in parallel rows along the upright axis of the spike.—A species of M., called CHILI M., or VALPARAISO CORN (*Z. Curagua*), is distinguished by its serrated leaves. It is a smaller plant, native of Chili, and has won a superstitious regard, because its grains when roasted split in the form of a cross.—See INDIAN CORN.

MAIZE BEER: see CHICA.

MAJESTY, n. *măj'ĕs-tĭ* [OF. *majestet;* F. *majesté*—from L. *majestātem*, grandeur, majesty—from *majus* for *magnus*, great]: greatness of appearance; dignity; grandeur; elevation of manner or style; sovereignty; title or address of kings or emperors (see below). MAJESTIC, a. *mă-jĕs'tĭk*, or MAJES'TICAL, a. *-tĭ-kăl*, stately; elevated; sublime; having dignity of person or appearance. MAJES'TICALLY, ad. *-lĭ.*—SYN. of 'majestic': grand; magnificent; splendid; royal; regal; dignified; lofty; imperial.

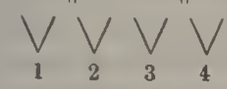
MAJESTY: title of honor now usually bestowed on sovereigns. Among the Romans, *majestas* denoted the power and dignity of the people; and the senatorial, consular, or dictatorial M. was spoken of, in consequence of these functionaries deriving their power from the people. After the overthrow of the republic, *majestas* became exclusively the attribute of the emperors, *dignitas* being thenceforth that of the magistrates. The *majestas* of the emperors of Rome was supposed to descend to those of Germany as their successors; but the adoption of the attribute M. by other European sovereigns is of comparatively late date. Its use began in England in the latter part of the reign of Henry VIII., till which time 'Your Grace' or 'Your Highness' had been the appropriate mode of addressing the sovereign. Henry II.

was the first king of France similarly styled, and Louis XI. and his successors became entitled in virtue of a papal bull, to call themselves by the title of 'Most Christian Majesty.' Ferdinand and Isabella of Spain similarly obtained for themselves and their successors the title of 'Most Catholic Majesty'; and Stephen, Duke of Hungary, and Maria Theresa, of 'Apostolic Majesty.' The emperor of Austria is now styled his Imperial Royal Majesty; in German, 'K. K. (abbreviated for 'Kaiserliche Königliche) Majestät.' Emperors, kings, and queens are now generally addressed as 'Your Majesty,' not including the sultan of Turkey, whose proper style is 'Your Highness.' The sovereign of the United Kingdom is personally addressed as 'Your Majesty;' and letters are addressed to 'The King's' or 'Queen's' 'Most Excellent Majesty.'—In *heraldry*, an eagle crowned, and holding a sceptre, is blazoned as an 'eagle in his majesty.'

MAJOLICA, n. *mă-jŏl'ĭ-kă* [It. *majolica*, delf-ware: comp. O.Ger. *magele*, a mug]: term for soft enamelled pottery, introduced into Italy from *Majorca* about the 12th c.—probably named from the island. Subsequently, when a large manufacture of the same kind of earthenware was carried on at Faenza, the name Majolica was dropped, and 'Faience' substituted.—The term is now used also to designate vessels of colored clay, coated with a white opaque varnish, so as to resemble artistic 'faience.' See POTTERY.

MAJOR, a. *mā'jĕr* [F. *major*, a major; *majeur*, greater —from L. *Majōrem*, greater]: greater in number, quantity, or extent: N. officer in rank above a captain and below a lieutenant-colonel; a head or superior; a person of full age. MA'JORSHIP, n. the office or rank of major. MAJORITY, n. *mă'jŏr'ĭ-tĭ*, full age or end of minority: the greater number; more than half; the number by which the votes for the successful candidate exceed those of all the unsuccessful ones together; the military rank of a major; in *OE.*, first rank. MAJORDOMO, *-dō'mō* [It. *major-domo*, a steward: Sp. *mayor-domo*—from L. *major*, greater; *domus*, a house]: a man who holds the place of master of a house; a steward. MAJOR-GENERAL, an officer next in rank below lieutenant-general. DRUM-MAJOR, the principal drummer in a regiment. SERGEANT-MAJOR, a non-commissioned officer subordinate to the adjutant. MAJOR INTERVAL, or MAJOR, in music, *interval* greater by half a tone or semitone than the minor interval of the same denomination; major intervals are those susceptible of being lowered a semitone without becoming false (see INTERVAL, in Music). Major is applied, however, chiefly to the mode, key, or scale. MAJOR MODE, in *music*, that mode in which the third and sixth tones of the scale form major intervals with the tonic or key-note; otherwise, when the intervals between the third and fourth, and seventh and eighth, of the scale are semi-tones: the mode, key, or scale, is said to be in the major when

the third above the key-note is a major third—i.e., when it is distant from the key-note four semitones; thus, C C♯ D D♯ E. MAJOR PREMISE, in *logic*, the premise



of a syllogism which contains the major term. MAJOR TERM, the term of a syllogism which forms the predicate of the conclusion.

MAJOR, in the Army: lowest field-officer in the U. S. army. He ranks above a captain, and next below the lieutenant-colonel, and commands in his absence; is mounted; and is responsible, with the adjutant, that the men are properly drilled and equipped.—Used adjectively, the word *major*, in the army, signifies a superior class in a certain rank, e.g., sergeant-major, who is a superior sergeant; except in the case of general officers, in which its signification is arbitrarily limited to major-general, the third of the four classes of generals.

MA'JOR, CHARLES: American novelist: b. Indianapolis, Ind., 1856, July 25. He was educated in the public schools and studied law, establishing a practice at Shelbyville. He has contributed to various magazines and has published: *When Knighthood was in Flower* (1898); *The Bears of Blue River* (1900); *Dorothy Vernon of Haddon Hall* (1902); *A Forest Hearth* (1903); *Yolanda, Maid of Burgundy* (1905); etc.

MAJOR AND MINOR, in Logic: every deductive syllogism (q.v.) has three terms and three propositions. The terms are the major, minor and middle. The propositions are the major, minor and conclusion. The middle term does not appear in the conclusion. The major term is always the predicate of the conclusion and the minor the subject. The major proposition contains the major term, the minor proposition contains the minor. In the syllogism, All A is B, All B is C; therefore, All A is C, B is the middle term, C the major term, and A the minor term. The first proposition is the minor, the second proposition the major. The order of the propositions as regards major and minor is of no consequence and in practice varies with different syllogistic forms. See LOGIC; REASONING.

MAJORCA, *ma-jawr'ka* (Spanish, *Mallorca*): largest of the Balearic Isles (q.v.); 107 m. s.e. of the mouth of the Ebro, the nearest point of the Spanish coast, and 171 m. n. of Algiers. Its greatest length (e. to w.) is 64 m., and its breadth (n. to s.) 48 m.; 1,430 sq.m. The n.e. half of the island is mountainous, with the highest summit 4,600 ft. above the sea. The other parts are beautifully diversified with hills, valleys, and plains. The climate is healthful, the sea-breeze preserving a nearly equable temperature over the whole island. The inhabitants, who much resemble the Catalans in their appearance and manners, are hospitable and industrious; they are

also superstitious, and many are uneducated; but crime is rare. They employ themselves mostly in agriculture. The chief products of the island are marble, slate, plaster, the common cereals and legumes, oranges, silk, lemons, oil, wine of excellent quality, olives, and aromatic herbs. The chief town is Palma (q.v.), the capital. The Spanish govt. makes use of Majorca as a place of banishment for political offenders. Pop. 252,000.

MAJOR'ITY, in Age: age at which a person acquires the status of a person *sui juris*—i.e., is able to manage his or her own affairs. This age, in the United States and in Great Britain is 21 years. Under that age, persons are called minors, or (legally) infants, and are more or less subject to guardians, who manage their property for them. It is chiefly with respect to the management of property that the distinction of majority exists, as it is assumed that persons under that age have not discretion and firmness to enter single-handed into contracts. It is also a common period fixed in wills at which to make provisions payable. As far as liability for crime is concerned, majority makes no difference, for all persons are capable of crime, when they have discretion enough to know that particular acts are criminal; but an infant under 7 years is conclusively presumed incapable of felony. Between the ages of 7 and 14, capacity in each case must be proved; above 14, it is presumed unless disproved. The period of full majority is the same in both sexes; but a young man can legally make a will of personal property at 18, and a young woman at 16 years of age. See INFANT, in Law.

MAJUBA (*mâ-jū'bâ*) HILL: an eminence in the extreme n. of Natal, Africa; the scene of the defeat of 648 British troops, with the loss of their leader, Sir George Colley, by a superior force of Boers, 1881, Feb. 27. On the anniversary of the disaster, 1900, Feb. 27, Lord Roberts received the surrender of the Boer commander, Gen. Cronje, with 4,000 men.

MAJUSCULÆ, n. *ma-jŭs'kū-lē* [L.]: capital letters used in old Latin manuscripts; majuscules. MAJUS'CULE, n. *-kūl* [L. *majuscula* (*litera*, letter, understood)—from *majusculus*, somewhat great, dim, from *major*, *majus*, greater]: a capital letter, as distinguished from a minuscule; such letters are found in Latin manuscripts of the 6th c. and earlier.

MAKAROFF, STEPAN OSIPOVICH: Russian vice-admiral: b. in 1848; d. 1904, Apr. 13. He entered the navy in 1864 and received rapid promotion for distinguished services. During the Russo-Turkish war 1877-8, he commanded the gunboat Grand Duke Constantine, and for a series of daringly successful attacks upon Turkish ports, which earned him the title of 'the Cossack of the Sea,' he was promoted captain of the second rank, aid de-camp to the late Tsar Alexander II., was decorated with the

orders of Saint Vladimir and Saint George, and received a golden sword of honor. In 1881, he took part with the legion of Skobeleff in the capture of Geok Tepe, in which Gen. Kuropatkin also figured prominently. The same year he commanded the cruiser Taman, the station guardship of the Russian embassy at Constantinople, and made a careful and complete study of the defenses of the Bosporus. In 1882-3, he was chief-of-staff of the offensive squadron in the Baltic under Admiral Chihacheff, minister of the navy. From 1891 to 1894 he was engaged in improvements of ordnance; among his inventions were the so-called cap guns possessing 20 per cent. greater power of penetration into the newest superimposed armor; and the Ermak ice-breaker, the first of the ice-breaking vessels now used in Baltic and northern Asiatic waters. After the disastrous attack of the Japanese on the Russian fleet at Port Arthur in 1904, Feb., Vice-Admiral Makaroff was sent to the Far East to direct the Russian naval operations, and arrived at Dalny Mar. 8. He repaired and converted the blockaded squadron into an active, aggressive naval force, but on Apr. 13 was lured out of harbor by a decoy squadron. Discovering the Japanese main fleet trying to intercept him he at once returned and was about to enter the harbor, when his flagship, the Petropavlovsk, was destroyed by one of the sunken mines laid by the Japanese across the passageway, and Vice-Admiral Makaroff, his guest Vasili Verestchagin (q.v.), the famous war-artist, 16 staff officers, and over 800 sailors perished.

MAKART, *mâ-kârt'*, HANS: 1840, May 28—1884, Oct. 3; b. Salzburg, Austria: painter. He was educated in the Vienna Gymnasium; began studying painting in the Vienna Art School, but was soon dismissed for incapacity; became a pupil of Piloty in Munich 1861; and completed his first painting, *Lavoisier in Prison*, 1862. He subsequently made art-journeys to Paris, London, and Rome; began exhibiting 1866; settled in Vienna in a studio provided for him by the emperor; spent the winters of 1875-6 in Egypt; and designed and arranged the historical procession in honor of the emperor's silver wedding 1879, Apr. 24. His paintings include *The Afternoon Entertainment of Noble Venetians* (1863); *Falstaff in the Washbasket; The Knight and the Water-Fairies; The Plague in Florence; Modern Amorettes* (1868); *Abundance* (1870); *Catharine Cornaro* (1873); *The Five Senses* (1879); *The Chase of Diana* (1880); *The Entry of Charles V. into Antwerp; Messalina; Judith;* and *Nile Hunt*. He became insane two months before his death.

MAKE, v. *māk* [Ger. *machen;* Dut. *maecken*, to make]: to form; to fashion; to mold; to compel; to produce or effect; to do; to perform; to cause to have a particular quality; to bring into any state or condition; to secure from distress; to establish in comfort and happiness; to raise, as profit; to gain; to reach or arrive at; to proceed;

to move; to operate; to contribute; in *OE.*, to travel; to tend: N. form; structure; composition. MA'KING, imp.: N. the act of forming or constituting; workmanship; composition; structure; form. MADE, pt. pp. *mād* [corrupted from *make-ed*]: did make. MA'KER, n. *-ėr*, one who makes; the Creator. TO MAKE ACCOUNT OF, to esteem; to regard. TO MAKE A MAN, to make the fortune of a person. TO MAKE AS IF, to pretend; to make show that. TO MAKE AWAY or TO MAKE AWAY WITH, to kill; to destroy. TO MAKE AWAY, to remove or transfer; to travel. TO MAKE BOLD, to take liberty; to dare. TO MAKE FOR, to move toward. TO MAKE FREE WITH, to treat without ceremony. TO MAKE GOOD or MAKE AMENDS, to defend; to maintain; to compensate for. TO MAKE LAND, to arrive near or at land, as a ship. TO MAKE LIGHT OF, to treat with indifference or contempt. TO MAKE LOVE TO, to attempt to gain the affections of; to court. TO MAKE MERRY, to be joyful or jovial in feasting. TO MAKE MUCH OF, to treat with fondness or esteem. TO MAKE NO DOUBT, to have no doubt; to be confident. TO MAKE OF, to understand; to effect. TO MAKE OFF, to run away; to decamp. TO MAKE OUT, to form or draw out; to understand clearly; to prove. TO MAKE OVER, to transfer; to alienate. TO MAKE SAIL, to increase speed by extending more sail. TO MAKE SHIFT, to contrive to do. TO MAKE SUIT TO, to endeavor to gain the favor of; to court. TO MAKE SURE OF, to consider as certain; to secure to one's possession. TO MAKE UP, to collect into a sum or mass; to constitute a sum or total; to reconcile; to compensate; to settle or adjust. TO MAKE UP FOR, to supply by an equivalent; to compensate. TO MAKE UP WITH, to become friendly to. TO MAKE WAY, to make progress; to advance; to permit to pass. MAKE-BELIEVE, a. fictitious: N. a mere pretense. A MAKE-PEACE, a peace-maker; one who endeavors to reconcile. MAKE-SHIFT, a temporary substitute; something adopted or constructed to serve a present purpose. A MAKE-UP, the fictitious representation of a thing; a thing not real or genuine; costume. MAKE-WEIGHT, any small thing thrown in to make up weight. *Note.*—The very many senses of MAKE are determined by the context.—SYN. of 'make, v.': to compose; effect; practice; hold; keep; suffer; incur; force; constrain; reach; arrive at; give; represent; show; fasten; bar; create; cause; occasion; produce; constitute.

MAKE, n. *māk* [AS. *maca* or *gemaca*, a companion: Icel. *maki*, a spouse: Norw. *makje*, a mate]: in *OE.*, a mate; a consort; a match; a friend; an equal. MAKE-LESS, a. *-lĕs*, in *OE.*, deprived of a mate, or in want of one; not having a match.

MA'KI. See LEMUR.

MAKIAN, *mâ-kē-ân'*: one of the Moluccas (q.v.).

MAKRIZI, *mâ-krē'zē*, TAKI EL-DIN AHMED IBN ALF EL: Arabic historian and geographer: prob. 1364—1441;

b. Cairo; of a family from Makriz, near Baalbec. He studied history, jurisprudence, tradition, astrology, etc., at Cairo, where also he afterward held the offices of mohtasib, or inspector of weights and measures, and of khatib and imám at different mosques. The most important of his numerous works are a *Topographical History of Egypt* (2 vols. folio, Bulàk A.H. 1270=A.D. 1854), a *History of the Mamluk Sultans;* and two treatises on Moslem (Kufic) coins, weights, and measures, edited and translated by Tychsen (into Latin), and by Silvestre de Sacy (into French). His History of Egypt is elaborate, interesting, and valuable.

MAL, *măl,* or MALE, *măl'ĕ* [F. *mal,* evil, ill—from L. *malĕ,* badly, ill; *mălŭs,* bad, evil]: a prefix signifying evil, ill, badly—as in *mal*formation, *male*diction.

MALABAR, *mâl-a-bâr':* district in the Madras presidency, India; lat. 10° 15′—12° 18′ n., long. 75° 14′—76° 52′ e.; bounded n. by South Kánara, e. by Coarg, the Nélgiri hills, and Coimbatore district, s. by the states of Cochin and Travancore, w. by the Arabian Sea; extreme length 145 m., breadth 25 to 70 m.; 5,763 sq.m.; cap. Calicut. The surface of the country is much diversified. The coast runs s.e., and has a few headlands and small bays, and an excellent natural harbor at Cochin. With few exceptions the shore is skirted by a low, sandy strip 1 to 3 m. broad, covered with luxuriant groves of cocoanut trees. From this strip the surface rises to the great range of the western Ghâts—3,000 to 7,000 ft. high—which forms the e. boundary, the interval being distinguished by long spurs, extensive ravines, dense forests, and tangled jungle. The country is watered by the Beliapatam, Kota, Mahe, Beypur, Kadelundi, and Ponáni rivers, and inland navigation is augmented by artificial canals connecting the principal lagoons or backwaters. Rice forms the chief food crop. Coffee, pepper, spices, ginger, arrowroot, cocoanuts, timber—especially teak—and salt fish lead the exports. The chief seats of commerce are Calicut, Cannanore, Tellicherri, Cochin, Palghát, and Badagara; European banks are represented at Calicut, Cochin, and Tellicherri; the principal educational institutions are at Calicut, Tellicherri, Palghát; and large printing establishments are at Calicut and Cochin. Manufacturing is almost confined to cloth weaving and brick and tile making at the mission stations at Calicut and Cannanore, and coarse cotton cloth and mat weaving at Palghát. There are 400 m. of railroad, besides many miles of well made and well kept wagon roads. The largest towns are Calicut, pop. 48,338; Palghát, 31,115; Tellicherri, 20,479; Cochin, 13,588; Cannanore, 10,265. Rom. Cath., Prot., and Syrian Christian churches and missions are numerous, and the native Christian pop. is steadily increasing. Pop. about 2,700,000.

MALABAR'RAT. See BANDICOOT.

MALABATHRUM, *măl-a-băth'rŭm:* name given by the anc. Greeks and Romans to aromatic leaves which were in high repute among them, as medicine and as perfume, and with which they sometimes flavored wine. These leaves were brought from India, whence they were often called *Indian Leaves;* and from the value in which they were held, sometimes simply *Leaves*, just as the term Bark is now used for the medicinal bark of the Cinchonas. Many fabulous accounts were current of their origin. They are now almost certainly known to be the same with the leaves sold in every Indian bazaar under the name of *Tej-pat*, product of two nearly allied species of Cinnamon (*Cinnamomum Tamala* and *C. albiflorum*), growing in the dense forests of the Himalayan valleys: and the name M. is regarded as a corruption of *Tamala-putra*, Tamala leaf. They are aromatic, fragrant, and gently stimulant.

MALACCA, *ma-lăk'ka:* British maritimo settlement on the s.w. coast of the Malay Peninsula, lat. 2° to 3° n., long. 102° to 103° e.; 40 m. in length, and, including the dist. of Naning, about 25 m. broad; about 1,000 sq. m. (For the *Peninsula* of Malacca, see MALAY PENINSULA.) Near the coast on the Strait of Malacca, the surface is flat and swampy, producing rice. Inland, there are low hills, Mount Ophir rising to 3,920 ft. Although there is little agriculture and the greater portion of the country is in the condition of jungle, the soil is fertile in rice, sago, pepper, fruits, vegetables, rattans, and timber. In the district of Naning are tin-mines of some value. The climate is remarkably salubrious; the land and sea breezes are regular; and the thermometer ranges from 72° to 85°, sometimes to 90°. M. was taken by the Portuguese under Albuquerque 1509; became a Dutch possession 1642; fell 1795 into the hands of the British, to whom it was finally ceded 1824. In 1867, M., with Singapore and the Prince of Wales Island, was transferred from the control of the Indian govt. to that of the British colonial secretary. Pop. (1891) 90,950; (1901) 95,487.

MALACCA: town and seaport of M., cap. of the dist. of M.; lat. 2° 11′ n., long. 102° 16′ e., at the mouth of a small river which flows into the Strait of Malacca. The harbor is shallow and this port has been outstripped in commerce by Singapore and Penang. It is handsome and well built, and presents a fine appearance from the sea. Its most interesting building is the church of our Lady del Monte, scene of the labors and supposed miracles of St. Francis Xavier, the 'Apostle of the East.' The people are of mingled nationalities, Malays, Chinese, mixed descendants of early Portuguese settlers, Arabs, and natives of India. Pop. variously estimated 5,000 to 20,000.

MALACCA, STRAIT OF: separating the Malay Peninsula on the n.e. from the island of Sumatra on the s.w.; length 520 m.; breadth varying from 25 m. at the s.e. to 200 m. at the n.w. extremity. In this strait are the British settlements of Singapore, Malacca, and Penang.

MALACCA-CANE, n.: a cane, used as a walking stick, imported from Malacca, though the tree producing it, *Calamus Scipionum*, is more common in Sumatra. Some are of a uniform rich brown, others mottled; the colors, it is said, are produced by smoke artificially applied.

MALACHI, *măl'a-kī* (probably abbreviated form of *Malachyah*, meaning 'messenger of Jehovah;' the Seventy and the Vulgate have *Malachias*): prophet who gives his name to the last canonical book of the Old Testament. Regarding this author nothing whatever is known; even early Jewish tradition is silent, though later legends are not lacking. Some have even doubted whether M. is a proper name or only an appellative; the Seventy, the Chaldee, Jerome, and many modern scholars—Vitringa, Hengstenberg, Umbreit, etc.—favor the view that it is an appellative—an ideal or official name. This is mere conjecture, and the arguments for it are weak. The period when M. composed this prophecy has been almost conclusively shown by Vitringa to have been during Nehemiah's second residence (as governor) in Jerusalem, about B.C. 433. The book of M. is cast somewhat in the form of a dialogue, and exhibits that strict regard for the proper observance of the ceremonial law, and that hatred of foreign marriages, etc., which marked the religious Jews after the return from exile; but is not as noticeable for prophetic fire, freedom, and dramatic force as were some of the earlier prophecies. Its place in the Scriptural canon has never been disputed, and is confirmed by several direct quotations in the New Testament.

MALACHITE, n. *măl'ă-kīt* [Gr. *malăchē*, a mallow]: highly prized mineral, essentially a green carbonate of copper—named from its color resembling that of the green leaves of mallows; used for a variety of ornamental purposes, and as a green pigment under the name emerald-green. It is found often as an incrustation or stalactitic with other ores of copper; often in large masses, often also crystallized in rather oblique four-sided prisms, bevelled on the extremities, or with the bevelling planes truncated to form six-sided prisms. It is often of fibrous structure. It is valuable as an ore of copper, though seldom smelted alone, not only because it is found with other ores, but because the metal is apt to be carried off with the carbonic acid. It is sometimes passed off in jewelry as turquoise, though easily distinguished by its color and much inferior hardness. It is used for many ornamental purposes; slabs of it—chiefly from the mines of Siberia—are made into tables, mantel-pieces, etc., of exquisite beauty. In 1835, a mass of solid M. was found in the Ural Mountains more than 17 ft. in length, weighing about 25 tons.

Crystal of Malachite.

MALACHY, *măl'a-kĭ*, Saint (Imar Malachy), known also as *Maelmaedog Ua Morgair*, Archbishop of Armagh, and later, papal legate in Ireland: abt. 1094–1148; of noble family: saint of the Rom. Cath. Church, remarkable for his connection with a very important period of Irish church history, also from the fact of his biography having been written by his distinguished contemporary, St. Bernard. Having been educated by a hermit named Imar, he received orders at an early age from the hands of Celsus, Abp. of Armagh. His reputation for learning and sanctity was unexampled in that age, and Celsus had early designed M. as his successor in the see of Armagh; but M. protested against it, in consequence of an abuse similar to that of Lay Impropriation (q.v.), by which the temporalities of the see were held by laymen, called *Coarbs*. At length he was elected, with the full rights of his see, though burdened with a struggle to maintain them against the heirs; and soon took measures for reform of the many abuses which prevailed in all the churches of Ireland. Having accomplished his work he claimed the privilege, which he had stipulated for, of retiring to his former small diocese of Connor, or rather to its poorer portion, the bishopric of Down. He went to Rome during the pontificate of Innocent II., and having in vain sought permission to resign his see, and retire to Clairvaux, returned to Ireland invested with extraordinary powers as legate of the pope. In this capacity he made a visitation of Ireland, and many of the controversies as to the ancient religious usages of the Irish Church turn upon this period. M. went a second time to France, 1848, to meet the pope, Eugene III., during his visit to that country, being deputed by the bishops of Ireland to ask from him the pallium for the abp. of Armagh; but before his arrival the pope had returned to Rome, and M., during a visit to his friend St. Bernard, at Clairvaux, was seized with an illness which ended in his death.—A 'Prophecy concerning the Future Roman Pontiffs,' is extant ascribed to Malachy. It designates, by a few brief phrases, the leading characteristics of each successive reign, and in some instances these descriptive characteristics have proved surprisingly appropriate. The characteristic of Pio Nono, *Crux de Cruce* (cross after cross), was the subject of much speculation. That the prophecy really dates from the time of M., no scholar now supposes; it was unknown not only to St. Bernard, but to all others until the 16th c. Neither Baronius nor any of his continuators deemed it deserving of attention.

MALACOLITE, n. *măl'ă-kō-līt* [Gr. *malăkos*, soft; *lithos*, a stone]: a mineral, a variety of augite of various shades of green, and of a vitreous or sub-pearly lustre.

MALACOLOGY, n. *măl'ă-kŏl'ŏ-jĭ* [Gr. *malakos*, soft, tender; *logos*, a discourse]: the natural history of mollusks or soft-bodied animals. Mal'acol'ogist, n. *-jĭst*, one versed in malacology.—*Malacology* in its proper sense was long neglected: Linnæus, and the naturalists

who preceded him, devoted some attention to this study; but until the time of Cuvier, the shells of the shell-bearing mollusks received a disproportionate share of attention, and the animals themselves were little regarded. Conchology (q.v.) has now sunk to a very subordinate place as a mere part of malacology, and this branch of science has been prosecuted during the 19th c. by many eminent naturalists with great zeal and success. The names of Oken, Savigny, De Blainville, Van Beneden, Milne-Edwards, and Owen, particularly are noticeable.

MALACOPTERYGIOUS, a. *măl'ă-kŏp-tĕr-ĭj'ĭ-ŭs* [Gr. *malăkos*, soft, tender; *pterugĭŏn*, a small feather, the fin of a fish]: having soft fin-rays, not sharp-pointed, as in in certain fishes. MAL'ACOPTERYG'II, n. plu. *-ĭj'ĭ-ī*, or MAL'ACOPTERYG'IANS, n. plu. *-ĭj'ĭ-ănz*, or MALACOP'TERI, *-tĕr-ī*, or MALACOP'TEROUS FISHES, *-tĕr-ŭs*, one of the two primary divisions of Osseous Fishes in the system of Cuvier, distinguished by soft or spineless fins, the rays of which are jointed. Spiny rays are occasionally found in the first dorsal and the pectoral fins. Cuvier subdivided them into orders according to the position or absence of the ventral fins; *M. abdominales* having the ventral fins beneath the belly, as the salmon and herring; *M. sub-brachiati* having the ventral fins beneath the shoulder, as the cod and haddock; and *M. apodes* lacking ventral fins, as eels. Müller, however—followed in this by Owen and others—has separated from the M. an order of fishes to which he has given the name ANACANTHS (*Anacanthini;* Gr. spineless), differing from acanthopterous fishes merely in the absence of spinous rays in the fins. Among the anacanths are the important families *Gadidæ* (Cod, etc.) and *Pleuronectidæ* (Flat-fish).

MALACOSTEON, n. *măl'ă-kŏs'tĕ-ŏn* [Gr. *malăkos*, soft; *ostĕŏn*, a bone]: softness of the bones; atrophy of bone.

MALACOSTOMOUS, a. *măl'ă-kŏs'tō-mŭs* [Gr. *malăkos*, soft; *stoma*, a mouth]: having soft jaws without teeth, as some fish.

MALACOSTRACOUS, a. *măl'ă-kŏs'tră-kŭs* [Gr. *malăkos*, soft; *ostrăkon*, a hard shell]: belonging to crustaceous animals, called by Aristotle MAL'ACOS'TRACA, *-trăkă*, e.g., the shrimp, lobster, etc.: the Malacostraca are now classified as a sub-class of *Crustacea* (see CRUSTACEANS), and comprise two divisions *Edriophthalmata* (q.v.) and *Podophthalmata* (q.v.).—See also INVERTEBRATE ANIMALS: LOBSTER: CRAB: SHRIMP. MAL'ACOS'TRACAN, n. *-trăkăn*, a crustacean. MAL'ACOS'TRACOL'OGY, n. *-kŏl'ŏ-jĭ* [Gr. *togos*, a discourse]: the natural history of the crustacea.

MALADJUSTMENT, n. *măl'ăd-jŭst'mĕnt* [F. *male*, fem. of *mal*, bad—from L. *mălus*, evil, and Eng. *adjustment*]: an evil or wrong adjustment.

MALADMINISTRATION, n. *măl'ăd-mĭn'ĭs-trā'shŭn* [L. *malus*, evil, and Eng. *administration*]: bad management of public affairs; bad management of business which has been intrusted to one.

MALADROITNESS, n. *măl'ă-droyt'nĕs* [L. *mălus,* evil, and Eng. *adroitness*]: lack of dexterity; awkwardness.

MALADY, n. *măl'ă-dĭ* [F. *maladie,* disease—from *malade,* sick, ill—from mid. L. *malĕaptus,* ill-disposed, then, sick—from L. *mălĕ,* badly, ill; *aptus,* attached]: any sickness or disease of the human body; depravity; moral disorder.—Syn.: disease; disorder; distemper; sickness; ailment; illness; indisposition.

MALA FIDE, phrase, *mā'la fī'dē* [L.]: in bad faith; deceitfully, treacherously.

MALAGA, n. a. *măla'ga:* a wine imported from *Malaga,* in Spain; also applied to raisins.

MALAGA, *măl'a-ga,* Sp. *mâ'lâ-gâ:* modern maritime province of Spain, formed from part of the anc. kingdom of Granada (q.v.); bounded n. by Seville and Cordova, e. by Granada, s. by the Mediterranean Sea, w. by Cadiz; 2,823 sq.m.; cap. Malaga. The surface rises sharply from the sea to the Sierras of Alhama, Abdalajis, Axarquia, Ronda, Mijas, Tolox, and Bermeja, some of whose summits are more than 7,000 ft. above sea-level. The principal rivers are the Guadalhorce, which rises in the Sierra de Alhama, flows through the beautiful vale of Malaga, and empties into the Mediterranean Sea near the cap. city; and the Guadiaro, nearly all of which is within the province. Owing to the broken nature of the surface, the means of internal communication are inadequate for travel and trade. The province is traversed n. to s. by the Cordova-Malaga railroad, and a branch line has been constructed from Bobadilla to Granada. Lead, nickel, and iron are plentiful in the mountains; thermal springs of sulphuretted hydrogen are found at Carratraca; lead, wine, raisins, grapes, oranges, lemons, figs, olive-oil, and almonds are largely exported; and coal, codfish, timber, pig-iron, hardware, and machinery are imported. The ravages of the phylloxera a few years ago induced many grape growers to undertake sugar-cane culture, and a new and considerable industry has been thus developed. Besides the world-famed wines, the chief manufactures are silk, satin, cotton, and hemp fabrics, morocco leather, chemicals, wicker-ware, hats, paper, and soap. The principal towns, besides the cap., are Antequera, Ronda, Colmenar, Marbella, Alora, Velez-Malaga, and Estepona. Pop. (1900) 511,989.

MALAGA, *măl'a-ga,* Sp. *mâ'lâ-gâ:* city and seaport of Spain, cap. of the modern province of Malaga; on the shore of the Mediterranean, 70 m. n.e. of Gibraltar. Sheltered on the n. and e. by mountains, and with a climate of which dryness and constant sunshine are characteristics, this place is superior as a resort for invalids to any in France or Italy. Winter, as it is in the northern United States or even in England, is here almost unknown. Malaga is a place merely of commerce, and with the exception of some fine Moorish remains, it contains

little that can be called artistic. The sea is here receding, and the old Moorish dock-yard and quay are now in the town, while the beautiful *Alameda,* or public walk, was covered with water in the last c. Malaga is famous for its sweet Muscatel wines, grown on the heights in the vicinity, and the richest of which are called *Las Lagrimas.* The produce of the vineyards is about 40,000 pipes. Exports consist chiefly of wines, oil, figs, almonds, grapes, sugar, and raisins; imports of salt fish, iron manufactures, and colonial produce. Sugar is manufactured; also cloth, ropes, leather, and soap. Malaga, known to the Romans as *Malaca,* is a very ancient place: it was founded by the Phœnicians, and has had a commercial career, and a degree of prosperity for 3,000 years. Pop. (1900) 130,109.

MALAGASSEE, a. *măl'ă-găs'sē:* belonging to Madagascar: N. the language of Madagascar.

MALAGUET'TA PEPPER. See GRAINS OF PARADISE.

MALAISE, n. *mă-lāz'* [F. *malaise,* uneasiness]: in *med.,* an indefinite feeling of uneasiness.

MALAKANES, *măl-a-kā'nēz* [Russ. *Molokani,* milk-eaters]: religious sect in Russia, named from their violation of the rule of the Greek Church which prohibits milk on fast-days: they prefer the name *Gospel-men.* The sect arose in the middle of the 18th c. as a result of the work of a Prussian prisoner of war who explained the Bible from house to house in a village of s. Russia. Their doctrines are strongly evangelical, with Quaker refusal of oaths and a tendency toward millennial expectations. Being poor and untaught, their spiritual earnestness has sometimes exposed them to be misled by fanatical teachers. In the time of Emperor Nicholas the Malakanes suffered severe persecutions: the police gathered about 16,000 of them into gangs, and drove them with physical violence across mountains and plains into the Caucasus. Many others fled into Turkey. See *Malakanes* in Blunt's *Dictionary of Sects.*

MAL'AKOFF, or MAL'AKHOFF. See SEBASTOPOL.

MALAMOCCO. See VENICE.

MALAN, *mâ-lŏng',* CÉSAR HENRI ABRAHAM, D.D.: zealous French evangelical minister whose influence has been great in central Europe: 1787, July 7—1864, May 18; b. Geneva. He studied theology in Geneva, and was ordained 1810; though, having been brought up in an infidel atmosphere (the presbytery of Geneva had issued an ed. of the New Test. in which passages teaching about Christ's person were changed to a Unitarian meaning), he did not throw off the influence of Voltaire and become a Christian convert, till 1817. Immediately then opposition met him: the ecclesiastical authorities forbade his preaching evangelical doctrines; he disobeyed, and was shut out from the pulpits in the city and discharged from his position as teacher in the Latin school. He

gathered a congregation in a small chapel which he built, and, after 1830 he made missionary tours as a revival preacher in various parts of central Europe: this he did without formally separating himself from the Established Presb. Church. In derision his adherents were called *Momiers* (q.v.): many congregations of them were gathered, and in Geneva Dr. Malan established a theological seminary. He had great zeal, spiritual fervor, and active beneficence; and his work was very fruitful.

MALANDERS, n. plu. *măl'ăn-dėrz* [F. *malandres*—from mid. L. *malandrĭă*]: chaps or scabs on the lowest parts of a horse's legs.

MALAPERT, a. *măl'ă-pėrt* [OF. *mal-apert*, ready to a fault—from OF. *mal*, ill, and *apert*, open, evident, ready, nimble in that he does: It. *aperto*, open, confident—from L. *apertus*, open]: bold and forward in speech or action; saucy; impudent. MAL'APERTLY, ad. *-lĭ*, impudently; saucily. MAL'APERT'NESS, n. *-nĕs*, quick impudence.

MALAPROP, n. *măl'a-prŏp:* name of a character (Mrs. Malaprop) in Sheridan's *Rivals*, noted for her blunders in the use of words. MAL'APROPISM, n. *-ĭzm*, act or habit of blundering in or misapplying words, through a desire to use big or fine language; a word so misapplied.

MALAPROPOS, ad. *măl-ăp'prō-pō'* [F. *mal*, evil; *à propos*, to the purpose]: unseasonably; ill to the purpose.

MALAPTERURUS, *măl-ăp-tė-rô'rŭs* [Gr. *malakos*, soft; *pteron*, a fin; *oura*, the tail]: genus of fishes of family *Siluridæ* (q.v.), in which, in place of a true dorsal fin, there is a soft fatty fin near the tail. Two species are known—*M. electricus* and *M. Beninensis*. See ELECTRICITY, ANIMAL.

MALAR, a. *mā'lėr* [L. *mala*, the cheek: It. *malare*, the cheek-bone]: pertaining to the cheek.

MA'LAR (or MÄ'LAREN), LAKE. See MAELAR, LAKE.

MALARIA, n. *mă-lā'rĭ-ă* [It. *male*, ill, bad; *arĭă*, air]: air bearing any noxious influences. MALA'RIAL, adj. *-rĭ-ăl*, or MALA'RIOUS, adj. *-rĭ-ŭs*, affected by malaria; unhealthy.

MALARIA: a disease marked by chills, fever, and sweating, recurring at regular intervals of usually from one to three days. It is due to the presence in the blood of a micro-organism of the genus *Plasmodium* or *Hæmamœba*. There are really at least three distinct diseases, each of which is caused by a parasite of a different species, yet the general features of the affections are so similar that they are very properly grouped under the same general title. The parasite, which is a unicellular animal organism of microscopic size, attacks and destroys the red corpuscles. It is introduced into the organism by the bite of a mosquito of the variety called *Anopheles* (not the ordinary *Culex*), which has become inoculated

by previously biting a person suffering from malaria. The plasmodium is taken into the stomach of the mosquito with the blood and there it undergoes a change in form. From a crescent-shaped body, as it is when drawn from the blood-vessels of man, it gradually assumes a spherical form. Some of these spheres remain for a time unchanged; others throw out filaments which later become detached, and swimming about in the blood enter the substance of the unchanged spheres. This is an act of fertilization and the now impregnated sphere becomes oval in shape, then pointed at one end; by means of this pointed end it bores its way out of the mosquito's stomach into the muscular wall of this organ; when there, it returns again to a spherical form. Now a thin membrane forms constituting an envelope or capsule and the substance of the cell divides into a great number of very small spheres and those again into minute rod-shaped bodies. These distend and finally burst the capsule and are carried by the blood to the salivary gland of the insect, whence they pass with the saliva into the blood of the next person whom the mosquito stings. When one of these minute bodies, the young of the malarial parasite, gets into the blood it swims about until it meets a red blood corpuscle, which it enters and at once begins to grow. It becomes spherical in form and then divides into a number of minute rounded bodies; it then bursts and the little spherules, which are spores, escape into the blood and attack and penetrate other red corpuscles, where they go through the same changes again. The time required for the spores to develop into the rounded parasite and divide again into new spores corresponds to the period from the beginning of one malarial paroxysm to the beginning of another. After a number of generations of this kind some of the cells do not split up into spores but become elongated into a sort of crescent shape. These now become quiescent and undergo no change so long as they remain in the blood-vessels, but when they are sucked from the vessel by a mosquito and have reached the insect's stomach they begin at once to develop and undergo the metamorphosis first described. There are the two reproductive cycles undergone by the malarial parasite—the one asexual, occurring in man; the other, sexual, occurring in the body of the mosquito. The presence of the parasite and its reproductive changes seem to have no injurious effect upon the mosquito, but in man every fresh dispersal of spores from the ruptured body of the mature parasite excites a fresh malarial paroxysm.

There are three known varieties of malarial parasite and the diseases they cause in man differ in severity and in the interval between the succeeding paroxysms. In the case of the tertian parasite (*Plasmodium vivax*) the paroxysms of chill, fever, and sweating recurs every other day, one day of apparent health intervening. With the

quartan parasite (*Plasmodium malariæ*), the paroxysm recurs every third day, with an interval of two days of freedom. The third variety, the estivo-autumnal parasite (*Plasmodium falciparum*), produces an irregular fever—sometimes one with a daily paroxysm; sometimes a remittent fever where there is no free interval, one paroxysm beginning before the symptoms of the preceding one have entirely subsided; it is this parasite also which causes the malignant or pernicious and congestive forms of malarial fever. The tertian parasite may also cause a daily paroxysm, but this is due to a double infection, one set of parasites maturing and exciting a paroxysm every other day, and the other set becoming active on the alternate days; this form is not called quotidian, although an attack occurs every day, but *double tertian* in recognition of its real nature. The attacks occurring on succeeding days may differ from each other in severity and in the time of their onset, but the attacks on the alternate are similar.

The premonitory symptoms of a malarial paroxysm, a fit of the ague as it used to be called, are much the same as in all febrile disorders—viz., pain in the back and lower extremities, languor, lassitude, gastric irritation, loss of appetite, nausea, and, sometimes, vomiting: in some cases there are frequent calls to micturate, the urine being pale and highly acid. Then follow in succession the 3 stages, *cold, hot,* and *sweating,* succeeded by the *interval* or apyretic period, lasting for hours, according to the type of the disease. In the *cold* stage, the patient experiences a chill in the back; then rigors set in, at first faintly, becoming quickly more distinct, until the teeth chatter and the patient feels cold all over, and demands more coverings: the skin shrivels, the nails become blue, and there is a sensation of great discomfort. But the feeling of cold is purely subjective, the thermometer, even during the rigors, indicating a temperature 2 or 3 degrees above normal in the mouth or in the rectum, though the skin, from contraction of the superficial vessels, is colder than normally it is. Other phenomena of the cold stage are gastric irritation, foul tongue, quickened respiration. As the *hot* stage sets in, the patient grows warm all over, the face flushes, the pulse rises in frequency and volume, the skin grows hot, and the patient becomes restless, seeking ease for his aching head, back, and limbs in frequent change of posture; the tongue is usually dry, often bile-tinted; the bowels constipated. In the *sweating* stage, at first, beads of perspiration appear on the brow and face, and the hands become moist; soon, to the great relief of the sufferer, the whole body sweats freely, the temperature begins to decline, and the paroxysm is at an end. Its average duration is 9 hours. As soon as the sweating stage begins, the temperature declines—at first slowly, then as rapidly as it rose; when the defervescence is

complete, a point one or two degrees below normal is reached, and there the temperature stands during the apyretic period. If the paroxysms be cut short by quinine, we may still detect, at the hour of expected attack, a distinct rise of the temperature, though none of the other symptoms of a paroxysm may occur, and the patient may be hardly sensible of it.

Keeping in view the fact that every paroxysm of intermittent fevers, particularly in a hot climate, is a step, however short, on the road to the cachectic condition, the importance of breaking the recurrence of the paroxysms is apparent. That must be the first object aimed at in the treatment. The second object is hardly less important —namely, to improve the condition of the blood, to prevent further degeneration of organs, and to restore, as far as may be, affected tissues to their normal condition. There is no drug known to medical science that can arrest the stages of a true ague when once it has entered on its first or cold stage. Therefore, while the fit is on, all that can be done is to mitigate the patient's discomfort by supplying him with abundance of warm covering during the cold stage; if this is protracted unduly, draughts of warm tea should be given him: and should symptoms of collapse appear, at the end of the hot stage, restoratives and stimulants should be administered.

But in the 'interval,' after the paroxysm is past, energetic efforts must be made to bring the patient under the influence of quinine. At once the most effective and the most economical plan is to administer quinine, in solution, in a 10-grain dose at the end of the sweating stage, and to repeat it every 6 hours. The remedy should be continued daily so long as the clinical thermometer indicates a rise of temperature at the time of expected attack, even if there be no sign of a regular cold stage. Four weeks after the fever has been subdued, the patient should be once again brought fully under the influence of quinine. The diet should be nutritious and easy of digestion.

Pernicious or *Malignant Intermittent Fever* differs from tertian or quartan fever in many important respects, particularly in its great fatality; it is caused by the estivo-autumnal parasite. In the United States it prevails chiefly in the southern and southwestern states. It is one of the most fatal of diseases. Its pernicious character may be masked in the first or the second paroxysm, while the third may be of the most *foudroyant* type. One of the most characteristic symptoms is delirium, which usually appears in the first paroxysm; or, instead of becoming delirious, the patient may fall into coma; or delirium may be followed by coma. Sometimes there are epileptiform convulsions. Symptoms resembling those of cholera sometimes appear—vomiting and purging, followed by great prostration, and collapse. Often there is profuse perspiration, and the extremities

become cold. The pulse is feeble and irregular, and the respiration is labored.

A measure of relief may be afforded to the patient by the application of heat in every available way, as by bottles of hot water, hot bricks, warm blankets; by the use of mustard plasters; and by the administration of stimulants. When the paroxysm is past, recourse is to be had to quinine. The patient's strength must be sustained with a nourishing and easily digested diet. The beneficial effect of stimulation in such cases is obvious.

When malaria has continued for a long time the sufferer falls into a cachectic state. He becomes anemic, the feet and ankles become edematous or the whole body may be more or less dropsical, the complexion is sallow, the eyes are sunken and dull, the patient is listless and apathetic, and the spleen becomes greatly enlarged, distending the abdomen, and forming the so-called *ague-cake*. Very severe neuralgia or intense paroxysmal headache is also a common sequel. The treatment of this condition consists in removal to a malaria-free region, rest in the open air, a nourishing diet, the administration of small doses of quinine, and iron and arsenic for the anemia.

The prevention of the disease, when one is in a malarious district, consists primarily in protection against the bites of the malaria-bearing mosquito. The doors and windows should be guarded by wire screens, and a well closed netting should cover the bed. If one has to go out of doors after sundown (the malarial mosquito is a night flying species) he should wear a veil covering the head and shoulders, gauntlets coming up outside the coat-sleeves, and gaiters to protect the ankles. The coat and trousers should be of thick material which the mosquito cannot penetrate. Women should wear bloomers clasping the ankles and gaiters to the knees and should carefully shake their skirts before re-entering the house. In addition one should take a daily dose of six to eight grains of quinine, say four grains morning and evening.

In addition to these measures of personal prophylaxis, every endeavor should be made to reduce the number of mosquitos. This is to be done by destroying their breeding places, which are collections of stagnant water. Marshy regions should be drained and pools which are not dried up by this means should be regularly sprayed with oil, which forms a film on the surface and kills the larvæ of the insect. Particular attention should be paid to the little collections of water in gutters, depressions of the surface, hollow topped stones, tomato cans, broken vessels, barrels, and other litter always found in the neighborhood of huts of the natives, barns, and other more pretentious buildings in small or large settlements.

MALATE, n. *măl'ăt* [F. *malate*—from L. *mālum*, an apple]: a salt of malic acid.

MALAXATOR, n. *măl'ăks-ā-tėr:* a mixing mill; cylinder having a rotating shaft and stirring-arms to incorporate materials. Mortar-mills, pug-mills, and many other machines come under this description, e.g., machines for mixing the ingredients of pills.

MALAY, n. *ma-lā':* a native of the peninsula of *Malay* or *Malacca* and adjacent islands: ADJ. pertaining to. MALAY'AN, a. *-lā'ăn*, pertaining to.

MALAY' APPLE: see EUGENIA.

MALAY' (or INDIAN or EASTERN) ARCHIPEL'AGO: largest and most important system of island groups in the world; 95° to 140° e. long., and 19° n. to 11° s. lat.; bounded n. by the China Sea, e. by the Pacific, s. and w. by Australia and the Indian Ocean. The principal groups in the M. A. are the Sunda Islands, including Sumatra, Java, Bali, Sumbawa, Flores, the Sandal-wood Island, Rotti, Timor, etc.; the Philippines, in the n.; Celebes and the Saleyer Islands, n. of Flores; the Moluccas, Key, Arru, Timor-Laut, and other groups, e. of Celebes. The chief islands for trade are Java, Sumatra, the Moluccas, and Borneo. The western or Dutch division of Papua, or New Guinea, is reckoned a part of the M. A. The Philippines belong to Spain; Great Britain possesses Singapore, Penang, Molucca, and Labuan. Native rajahs rule over several of the islands, but the Dutch E. Indies include the largest portion. The heat is tempered by sea-breezes, and water is abundant. Sugar, coffee, indigo, rice, and tea are largely produced in Java and Sumatra. Benzoin, gum-elastic, resin, pepper, rattans, cotton, drugs, ivory, dye-stuffs, edible nests, wax, tobacco, opium, and bêche-de-mer also are exported. Fine timber trees, including iron-wood, ebony, etc., are abundant, and the vegetation is luxuriant. Birds of paradise, and a fine species of parrot, are found in Papua, the Arru, and Key islands (see the several titles of principal groups or islands as above).

MALAY' PENINSULA, or MALAC'CA: long strip of land extending from Indo-China s. and s.e. toward the island of Sumatra. The peninsula begins properly at the head of the Gulf of Siam, and would thus include part of Siam proper and the British province of Tenasserim; but it is usual to limit the name to the portion s. of the river Pakshan, the frontier of Tenasserim. In the larger sense, the length of M. is about 900 m., and its area 83,000 sq. m.; the population is estimated less than 1,000,000. The width varies from 45 m. at the isthmus of Kra, and also at another point farther south, to 210 at Perak. The interior consists mainly of magnificent wooded granite mountain-ranges, some of whose peaks attain a height of 6,000 to 7,000 ft.; while along the coast there is almost everywhere a flat and fertile belt, fringed with numerous islands. There are numerous small rivers. The mean annual temperature near the sea is abt. 80°. There is no winter, but rains are frequent through the year. Tigers and leopards are

numerous and of great size. The Indian elephant, the rhinoceros, and several species of monkeys are found; also the vampire-bat, poisonous snakes, and many beautiful and brilliant birds. Tin abounds, and is largely worked. In physical features, M. resembles rather the islands of Sumatra and Java than Indo-China. The inhabitants are mainly Siamese in the north, civilized Malays (q.v.) along the coast, and uncivilized Malays, mixed with aboriginal Negrito tribes, in the interior. Politically, the n. part of the peninsula is occupied by small states tributary to Siam (as far south as 5° n.); the s. part by Malay states under British protection (as Perak, q.v., Johore, Rumbo, Salangor) and the British Straits settlements. These include the important islands of Singapore and Prince of Wales Island (with Wellesley on opposite coast), and Malacca (see these titles). It has been proposed to cut a ship-canal across the isthmus of Kra.

MALAYS, *ma-lāz'* (MALÁYU, a Malay word): name given, in a restricted sense, to the inhabitants of the Malay Peninsula, but in its wider acceptation, to a great branch of the human family found also in the islands of the Indian archipelago, in Madagascar, and in the numerous islands of the Pacific. In the fivefold division of mankind by Blumenbach, the M. are treated as a distinct race; but by most recent authors (of whom many hold to a threefold division of the human race) they are regarded as a branch of the Mongolidæ. Prichard has subdivided the various representatives of the Malay family into three branches:—(1.) the Indo-Malayan, comprehending the M. proper of Malacca, and the inhabitants of Sumatra, Java, Celebes, the Moluccas, and the Philippines, with whom, perhaps, may be associated the natives of the Caroline Islands and the Ladrones; (2.) the Polynesians; (3.) the Madecasses, or people of Madagascar. Accepting this subdivision, the present article is confined to the M. proper. For the natives of Madagascar, see that title: for the Polynesians generally and the Maoris in particular, see those titles.

In physical appearance, the M. are a brown-complexioned race, rather darker than the Chinese, but not so swarthy as the Hindus. They have long, black, shining, but coarse hair; little or no beard; a large mouth; eyes large and dark; nose generally short and flat; lips rather thicker than those of Europeans; and cheek-bones high. In stature, the Indo-Malays are for the most part below the middle height, while the Polynesians generally exceed it. The Indo-Malays have also slight, well-formed limbs, and are small particularly about the wrists and ankles. 'The profile,' according to Dr. Pickering, 'is usually more vertical than in the white race, but this may be owing in part to the mode of carriage, for the skull does not show a superior facial angle.' This is the general appearance of the M. proper, or inhabitants of the peninsula and Indian Islands; but they have subdivisions. There are the civilized M., who have a written

language, and have made some progress in the arts of life; there are the sea-people, *orang-laut*, literally 'men of the sea,' a kind of sea-gypsies or robbers; and there are the *orang banua* or *orang utan*, 'wild men,' or 'savages,' dwelling in the woods or forests, and supposed to be the aborigines of the peninsula and islands. 'These three classes of Malays,' says Crawfurd, 'existed nearly three centuries and a half ago, when the Portuguese first arrived in the waters of the Archipelago, just as they do at the present day. That people describes them as having existed also for two centuries and a half before that event, as, without doubt, they did in times far earlier.' Still, while so widely differing in habits, all these speak essentially the same language. The M. are essentially islanders, and have much of the daring and enterprise for which nations familiar with the sea are famous: they are found either as traders, or as pirates, through large portions of the eastern world. Their original seat is by themselves stated to have been Menangkabo, in the island of Sumatra, rather than the peninsula itself. Even the M. of Borneo claim to have had a Menangkabo origin. Palembang, however, also in Sumatra, has been mentioned as the original seat of Malay civilization; and others, again, point to Java as the source from which both Menangkabo and Palembang received their first settlers. 'The Javanese,' says Crawfurd, 'seem to have been even the founders of Malacca. Monuments, which prove the presence of this people in the country of the Malays, have even been discovered. Thus, Sir Stamford Raffles, when he visited Menangkabo, found there inscriptions on stone in the ancient character of Java, such as are frequent in that island; and he was supported in his conclusion that they were so by the learned natives of Java who accompanied him in his journey. The settlement of the Javanese in several parts of Sumatra is indeed sufficiently attested. In Palembang, they have been immemorially the ruling people; and although the Malay language be the popular one, the Javanese, in its peculiar written character, is still that of the court.' The Malay language is simple and easy in construction, harmonious in pronunciation, and easily acquired by Europeans. It is the *lingua franca* of the Eastern Archipelago. Of its numerous dialects, the Javanese is the most refined, a superiority which it owes to the influence of Sanskrit literature. Many Arabic words also have been incorporated with it, by which the Javanese supply the deficiency of scientific terms in their own tongue. In religion, the civilized M. are Mohammedans, having embraced that faith in the 13th or 14th c., forsaking for it Buddhism, which had been introduced probably about the 5th c. The tribes in the interior and the 'men of the sea' have either no religion, or such as can be regarded only most debased superstition. The moral character of the Indo-Malays generally does not stand high: they are passionate, treacherous, and revengeful. Although good sailors,

and able to amass wealth by legitimate commerce, they prefer piracy, and numerous have been the victims among European traders to Malay treachery and daring. Indeed, so little faith have Europeans in their professions or engagements, that they habitually refuse to engage more than two or three of them in a ship's crew, for fear of unpleasant, if not disastrous consequences.

MALCOLM, *măl'kom*, MacDuncan, surnamed Canmore (Celtic, *Ceun-more*, 'Great Head'), King of Scotland: about 1024–1093, Nov. 13 (reigned 1056 or 7—93). He was the third Scottish king of the name Malcolm: M. MacDonald having reigned 944–53; and M. MacKenneth (grandson of the preceding) having reigned 1003–33. [A collection of laws, the *Leges Malcolmi Mackenneth*, has been attributed to him, but is obviously a work of a later age.]

For the first nine years of M. MacDuncan's reign, he was at liberty to devote his energies to the consolidation of his kingdom, England being then ruled by the peaceful Edward the Confessor. After William of Normandy had settled himself on the English throne, many noble Saxons sought refuge at the Scottish court; among them Edgar Atheling, nearest of kin to the Confessor, with his mother, Agatha, and his sisters Margaret and Christina. Margaret, who was young, beautiful, and pious, captivated the heart of the Scottish king, and a marriage quickly followed. Her biographer, Turgot (also her chaplain and confessor), tells us how earnestly and affectionately she labored to civilize the people and to 'enlighten' her husband. M., though a man of vigorous intellect, could not read her missals and books of devotion, but he used to kiss them in token of reverence, and he caused them to be richly bound, and ornamented with gold and jewels. The retinue of the king began to show something of a royal magnificence, and his plate was, according to Turgot, 'at least gilt or silvered over.' But M.'s new relations, unfortunately, embroiled him with the Normans. In 1070, he crossed the border, harried Northumberland and Yorkshire, but was soon obliged to retreat. William the Conqueror retaliated 1072, and wasted Scotland as far as the Tay. At Abernethy, M. was compelled to acknowledge him as his liege lord but (as the Scottish historians hold) only for such parts of his dominions as had belonged to England—viz., Cumbria and the Lothians. War broke out again between England and Scotland on the accession of William Rufus, probably at the instigation of the fugitive Anglo-Saxons and the discontented Normans, who had been pouring into the country during the iron reign of William, and had obtained large grants of land from the Scottish monarch. Nothing of note, however happened, and peace was again concluded; but the seizure of Carlisle by the English king soon provoked a fresh rupture, and, 1093, M. again crossed the border, and laid siege to Alnwick; but was suddenly attacked, defeated, and slain. His wife died on hearing the fatal news.

A fourth king of the same name was MALCOLM, surnamed '*the Maiden*,' 1141-1165 (reigned 1153-65), who was compelled to put down insurrections headed by Somerled, Lord of the Isles.

MAL'COLM, Sir JOHN, G.C.B.: 1769, May 2—1833, May 30; b. Burnfoot, Westerkirk, Dumfriesshire: British statesman and historian. At the age of 14 he went to India as a cadet in the Madras army. About 1790, he began the study of Oriental languages, especially Persian. He distinguished himself at the siege of Seringapatam 1792, and was appointed to the staff as Persian interpreter. In 1800, he was ambassador to Persia, and formed an alliance with that country against Bonaparte. In 1802, 07, and 09, he was again minister-plenipotentiary to the Persian court. In 1803, he had been appointed president of Mysore. In 1812, he returned to England, received knighthood, and, after five years, went again to India on a political mission in the Deccan, and with the rank of brigadier-general in the Indian army; as a soldier greatly distinguishing himself in the wars against the Pindarris and Holkar. In 1827, he was appointed governor of Bombay; left India 1830, and died at Windsor, England. Malcolm's writings are esteemed as authorities; they are—*A History of Persia* (London 1815, 2 vols. 4to; 2d ed. 1828); *Memoir of Central India* (2 vols. London 1823); *Political History of India from 1784 to 1823* (2 vols. 8vo, 1826); and *Life of Lord Clive* (London 1836). See his Life and Correspondence, by Kaye (1856).

MALCONFORMATION, n. *măl'kŏn-fŏr-mā'shŭn* [L. *mălus*, evil, and Eng. *conformation*]: ill form; disproportion of parts.

MALCONTENT, n. *măl'kŏn-tĕnt* [L. *mălus*, evil, and Eng. *content*]: one discontented or dissatisfied, particularly with political affairs; one given to seditious words or acts. MAL'CONTENT, or MAL'CONTENT'ED, a. *-tĕnt'ĕd*, discontented; dissatisfied. MAL'CONTENT'EDLY, ad. *-lĭ*. MAL'CONTENT'EDNESS, n. *-nĕs*, discontentedness.

MALDAH, *mawl'dâ:* town of British India, in Bengal; chief town of the dist. of Maldah (bounded w. and s.w. by the Ganges; 1,813 sq.m.; pop. 710,310). The town is on the left bank of the Mahununda, about 190 m. n. of Calcutta. In the rainy season, it is nearly insulated. It is a wretched place of ruined houses, with narrow, irregular streets. Pop. 6,000.

MALDEN, *mawl'dĕn:* Mass., city, in Middlesex county; on the Malden river, and on the Boston & Maine railroad; about four miles north of Boston. It is connected by electrical railway with Boston, Lowell, Haverhill, Lynn, Salem, and a number of other cities and towns. Malden includes several villages.

The first settlement was made in 1641, but the place remained a part of Charlestown until 1649, when it was

made a separate, incorporated municipality. It was chartered as a city in 1881. It is a manufacturing city, having over 630 manufacturing establishments, representing nearly 50 different industries. The chief products are rubber boots and shoes, boot and shoe lasts, and boot-trees, wire cord, leather, sand and emery paper, cotton goods, fibre goods, hosiery and hosiery supporters, knit goods, furniture, soap, and picture molding. The manufactories have a combined capital of nearly $8,000,000, and the annual output is nearly $17,000,000. The number of employees is about 5,000. The municipal expenditures are annually about $602,000. The Metropolitan District water system supplies water to the city, also to Melrose and Medford. Malden has excellent public and parish schools, a number of fine church buildings, a Y. M. C. A. building, four libraries, which contain about 33,000 volumes; a home for the aged, and a city hospital. The Converse Library building, designed by Richardson, is beautiful and commodious. The government is vested in a mayor and a council. The executive appoints, subject to the approval of the council, the administrative officials. Pop. (1890) 23,031; (1900) 33,664; (1910) 44,404.

MALDIVE ISLANDS, *măl'dīv:* chain of low coral islands forming a remarkable archipelago, in the Indian Ocean, about 400 m. w.s.w. of Ceylon; 500 m. in length by 45 m. average breadth, and comprise 17 groups or atolls, each atoll surrounded by a coral reef. The entire number of islands, including the islets, is estimated at about 50,000. Mali, the largest of the chain, and the residence of the native prince, who is called 'The Sultan of the Twelve Thousand Isles,' is 7 m. in circumference; pop. 2,000. Each island is circular in form, with a lagoon in its center, and has an elevation above the sea averaging about 6 ft., and in no case more than 20 ft. at high-water mark. The larger and inhabited islands are clad with palm, fig, citron, and bread-fruit trees. Grain is abundantly produced. Wild-fowl breed in prodigious numbers; fish, rice (imported from Hindustan), and cocoanuts constitute the food of the inhabitants, who are strict Mohammedans. The 'sultan' sends an annual tribute to the governor of Ceylon. Pop. of entire chain about 30,000.

MALE, a. *māl* [OF. *masle;* F. *mâle,* male—from L. *mas'cŭlus,* of the male kind, manly]: relating to the sex that begets young; bearing stamens only; having the thread on the outside, as a screw: N. a male animal or plant; in *bot.,* a plant or flower which bears stamens and no pistil. MALE SCREW (see SCREW). MALE FERN (see FERN).

MALEBRANCHE, *mâl-brŏngsh',* NICOLAS: French philosopher: 1638, Aug. 6—1715, Oct. 13; b. Paris, where his father was president of the chamber of accounts. He was deformed and sickly, and from childhood fond of solitude. At the age of 22, he entered into the Congre-

gation of the Oratory, and applied himself to the study of Bible history and of the Fathers of the church, till Descartes's treatise, *De Homine,* falling into his hands, attracted him to philosophy. His famous work, *De la Recherche de la Vérité* (3 vols. Paris, 1674, and other editions), evincing great depth and originality of thought, combined with perspicuity and elegance, had for its object the psychological investigation of the causes of the errors to which the human mind is liable, and of the nature of truth and the way of reaching it. He maintains that we see all things in God (his famous *Vision en Dieu*); that all beings and thoughts exist in God (*Dieu est le lieu des esprits, comme l'espace est le lieu des corps*); and that God is the first cause of all changes which take place in bodies and souls, which are therefore merely passive therein. His name, together with that of Geulinx, is connected with the doctrine of occasionalism (q.v.), of which they are the chief exponents. His system is a kind of mystic idealism. It was immediately opposed by Ant. Arnauld, Bossuet, and many others, and was subjected to a thorough and critical examination by Locke and Leibnitz. Besides the work above mentioned, Malebranche wrote a *Traité de Morale, a Traité de la Communication de Mouvement,* and *Conversations Métaphysiques Chrétiennes,* in the last of which he endeavored to exhibit the harmony of his philosophic views with Christianity. He died at Paris (and as English critics are fond of saying) of a metaphysical dispute with the subtle Berkeley.

MALEDICTION, n. *măl'ĕ-dĭk'shŭn* [F. *malédiction*—from L. *maledictĭōnem,* evil-speaking—from *mălĕ,* badly, *mălus,* evil; *dictus,* spoken]: evil-speaking; denunciation of evil; curse or execration.—Syn.: curse; cursing; imprecation; execration; anathema; denunciation.

MALEFACTOR, n. *măl'ĕ-făk'tẽr* [L. *malefactor,* an evil-doer—from *mălĕ,* badly, *mălus,* evil; *factus,* done; *factor,* a doer]: an evil-doer; a criminal.—Syn.: criminal; evil-doer; culprit; felon; convict.

MALESHERBES, *mâl-zārb',* Chrétien Guillaume de Lamoignon de: 1721, Dec. 6—1794, Apr. 23; b. Paris: French statesman. He was educated at the Jesuits' College; became counselor to the parliament of Paris 1744, and president of the court of aids 1750. About the same time (1750), he was appointed censor of the press, a most unsuitable office for him, which he appears to have accepted lest it should fall into the hands of some bigot or court-hireling; and so tolerant was he, that French authors pronounced the period of his censorship 'the golden age of letters.' To Malesherbes is due the publication of the famous *Encyclopédie.* In 1771, his bold remonstrances against the abuses of law which Louis XV. was perpetrating, led to his banishment to one of his estates. At the accession of Louis XVI. (1774), who esteemed Malesherbes, he was recalled, and entered

Paris in triumph. In 1776, on the dismissal of Turgot, he resigned all official employment; and till the Revolution, spent his time in travel, or in improving his estates. The first storms of that wild period passed by and left him unscathed; but when he heard that the unfortunate king, who had always neglected to profit by his advice, was about to be tried by the convention, he magnanimously left his retreat, and offered to defend his old master. The convention granted permission, but from that day M. was himself a doomed man. He was arrested 1793, Dec., and guillotined in April following, after he had witnessed the death of his daughter and her husband, M. de Chateaubriand, brother of the famous author of that name. M. was a member of the French Acad., an able writer on political, legal, and financial questions; and was a noble, gentle, and stainless man, one of the most high-minded statesmen of the 18 century.

MALET′, Claude François de: see Mallet.

MALEVOLENT, a. *mă-lĕv′ŏ-lĕnt* [L. *malev′ŏlens* or *malevŏlen′tem*, ill-disposed—from *mălĕ*, badly, *mălŭs*, evil; *volens*, willing]: ill-disposed and spiteful toward others; prompted by personal hate or malice to do injury. Malev′olence, n. *-lĕns*, evil disposition and spite toward another; a hatred that prompts to injure another. Malev′olently, ad. *-lĭ*.—Syn. of 'malevolent': ill-disposed; malicious; malignant; mischievous; evil-minded; envious; invidious; resentful; spiteful; bitter; rancorous.

MALFEASANCE, n. *măl-fē′zans* or *măl-fā′zăns* [F. *malfaisance*, malevolence—from *mal*, ill, badly; *faire*, to do—from L. *facĕrĕ*, to do]: evil-doing; illegal deed.

MALFORMATION, n. *măl′fŏr-mā′shŭn* [F. *mal*, ill, badly—from L. *mălĕ*, badly, and Eng. *formation*]: ill or wrong formation. Malformed, a. *măl-fawrmd′*, ill-formed—only applied to animal bodies.

MALIBRAN, *mâ-le-brŏng′*, Maria Felicita: one of the most celebrated mezzo-soprano singers of recent times: 1808, Mar. 24—1836, Sep.; b. Paris; daughter of Manuel Garcia, Spanish singer and teacher of singing. When she was still very young, her reputation extended over Europe. Her father attempted to establish the Italian opera in New York, but without success; and, on account of his circumstances, she married M. Malibran, a Frenchman, supposed to be one of the richest merchants of New York, but who soon became bankrupt, on which she went again upon the stage, and was received with great enthusiasm in France, England, Germany, and Italy. She expended, with remarkable benevolence, the great sums which she won. Her first marriage having been dissolved, she married M. Beriot, famous violinist, 1836; but in Sep. of that year, she died at Manchester, whither she had gone to take part in a musical festival. M. was a woman of noble heart and high intellect, and her conversation possessed an exquisite fascination. She has left a number of musical

compositions, some of which are deservedly popular. A memoir of her was published in England shortly after her death, by the Countess of Merlin.

MALIC, a. *mā'lĭk* [L. *mālum*, an apple]: of or from apples, as *malic acid*. MALIC ACID ($C_4H_6O_5$) occurs abundantly in most acidulous fruits, particularly in unripe apples, gooseberries, and currants, in which it is found as an acid or super-salt of potash or lime, which gradually changes into a neutral salt as the fruit ripens. It crystallizes in groups of radiating acicular prisms, but as the crystals are very deliquescent, it is obtained usually as a syrupy, semi-transparent mass, with a very sour smell, and readily soluble in water and alcohol. The chemical changes which this acid undergoes under the influence of various reagents are very remarkable, and illustrate many points in vegetable physiology in reference to the maturation of fruits, etc. Thus, nitric acid converts it into oxalic acid; hydrated potash, into oxalic and acetic acids; ferments, into succinic, butyric, acetic, and carbonic acids and water. When heated to about 350°, it loses the elements of water, and becomes converted into the two isomeric acids, maleic acid and fumaric acid (q.v.). Malic acid forms two series of salts with bases, namely, neutral and acid salts. The most characteristic of these salts are the neutral malates of lead and of lime.

MALICE, n. *măl'ĭs* [F. *malice*—from L. *malĭtĭă*, ill-will—from *mălus*, evil: It. *malizia*]: extreme enmity of heart; a disposition to injure others unjustly for personal gratification or from a spirit of revenge; spite; deliberate mischief. MALICIOUS, a. *mă-lĭsh'ŭs* [F. *malicieux*—from L. *malitĭōsus*]: harboring enmity without cause; proceeding from extreme hatred or ill-will. MALI'CIOUSLY, ad. *-lĭ*. MALI'CIOUSNESS, n. *-nĕs*, extreme enmity or disposition to injure. MALICE PREPENSE, *prē-pĕns'* [L. *pre*, before; *pensus*, weighed]: malice previously and deliberately entertained (see MALICE, in Law).—SYN. of 'malice': ill-will; virulence; grudge; pique; hatred; animosity; malevolence; enmity; aversion; malignity; maliciousness; rancor; bitterness;—of 'malicious': see under MALEVOLENT.

MAL'ICE, in Law: planning or doing a wrongful act without lawful excuse. The motive in either case is the purpose and intention of one person to injure in some way another; and the absence of any legal justification makes the acts differ from those of ordinary malice, or the ill-will of one person toward another, from which may spring any amount of real or fancied causes of injury. A spiteful, malignant, vindictive, or revengeful disposition, is apt to commit acts of malice both in the ordinary and the legal sense, and may be guilty in the former and not guilty in the latter sense. An injurious act emanating from a weak mind, a lack of caution, or a sudden, unaccountable impulse, may have all the force of ordinary malice; but in the absence of a de-

signed, intentional injury, it will not come within the strict limits of criminal malice. The law infers an intent to kill from the deliberate use of a deadly weapon; and it has been held that a burglar intended murder when he broke into a dwelling because he would commit it if necessary to escape.

MALI'CIOUS PROSECU'TION: prosecution based on malice in law; one for which there is no probable cause; or which on trial the facts did not warrant. It may be by criminal proceeding or civil suit, and the person against whom the proceeding is taken may maintain an action and recover damages. A party who directly and personally institutes malicious proceedings, or instigates or causes them, is responsible for the results, for 'every man is presumed to intend the natural and probable consequences of his own voluntary acts.' Action in relief can be maintained against the prosecutor and against a mere informer; it can be taken against a former plaintiff in a civil action who maliciously sued out a writ and prosecuted it, and will lie against a corporation; but it cannot be maintained against grand jurors for information given them and on which the prosecution is founded, nor against an attorney at law for bringing the action if he was regularly retained. But before action in relief is begun, the malicious prosecution or action must be ended, and the aggrieved party show by acquittal or final judgment that the prosecution was without cause.

MALICORIUM, n. *măl'ĭ-kō'rĭ-ŭm* [L. *malĭco'rĭum*—from *mālum*, an apple; *corĭŭm*, skin]: the tough rind of a pomegranate.

MALIGN, a. *mă-līn'* [L. *malignus*, envious, spiteful, for *mali-genus*, ill-born—from *mălus*, bad; *geno*, I bring forth, I produce: It. *maligno;* F. *malin;* OF. *maling*, malignant]: having violent hatred or enmity toward others; unfavorable; pernicious; tending to injure: V. to regard with envy or malice; to defame; to treat with extreme enmity. MALIGN'ING, imp. MALIGNED', pp. *-līnd'*. MALIGN'ER, n. *-ẽr*, one who maligns; a sarcastic censurer. MALIGN'LY, ad. *-lĭ*, perniciously. MALIGNANT, a. *mă-lĭg'-nănt* [L. *malig'nans* or *malignan'tem*, wounding, mutilating]: actuated by extreme enmity or malice; virulent; dangerous to life; extremely heinous: N. in *Eng. hist.*, one of the adherents of the house of Stuart—so called by the opposite party. MALIG'NANTLY, ad. *-lĭ*. MALIGNANCY, n. *mă-lĭg'năn-sĭ*, bitter enmity; state of being malignant. MALIGNITY, n. *mă-lĭg'nĭ-tĭ* [F. *malignité*—from L. *malignĭtātem*, ill-will, spite]: bitter enmity toward another; malice without provocation; deep-rooted spite; extreme evilness of nature; violent hatred; virulence.—SYN. of 'malignant': see under MALEVOLENT.

MALIGNANT PUSTULE: the cutaneous form of anthrax or splenic fever, often employed to denote any form of a disease. Anthrax is primarily a disease of

herbivorous animals, especially sheep and cattle, and is conveyed to man chiefly by means of infected hides, wool, etc., but also by direct contact with the diseased animals themselves, and sometimes through the agency of insects. There are three principal forms of anthrax as it occurs in man—the pulmonary, the intestinal, and the cutaneous—all caused by the same micro-organism, *Bacillus anthracis.*

Pulmonary anthrax, wool-sorters' disease, begins with undefined feelings of malaise, perhaps slight chills, and loss of strength. The appetite is poor, though not always absent, there is great thirst, vomiting is not uncommon, and there may be diarrhea. There is a feeling of oppression, and sometimes of pain, in the chest, and there may be slight cough. The fever is moderate (102° to 104°), the pulse is weak and irregular, and the respiration is rapid and difficult. Headache is common, and in exceptional cases there is more or less delirium. In general, however, the symptoms are very mild and out of all proportion to the gravity of the disease; one may be out of sorts for a few days, yet hardly ill enough to stay in bed, and suddenly collapse and die in a few hours.

Intestinal anthrax is very rare, in this country at least. The symptoms are much the same as those of the pulmonary form, except that the intestinal symptoms are more pronounced. The cough and oppression in the chest are absent, but the patient suffers from persistent nausea and vomiting, diarrhea, and pain in the abdomen.

Cutaneous anthrax occurs usually in the form of malignant pustule, but there is another variety, less commonly seen, called malignant edema. The malignant pustule occurs through inoculation of some portion of the skin with the anthrax microbe, sometimes, it is supposed, through the agency of a biting fly. There is first a little red pimple, which itches and burns a good deal, and in a day or two a vesicle or small blister forms, while the skin surrounding it is the seat of a dusky swelling. This vesicle bursts and is succeeded by a black scab surrounded by an elevated ring of new vesicles; these in turn break down, and so the black scab, which is really a patch of dry gangrene, spreads. The skin about it is hard, swollen, and of a dusky reddish hue. The lymphatic glands in the neighborhood also become enlarged. After a while general symptoms appear, which are the same as those described above—sometimes the pulmonary and sometimes the intestinal symptoms being most marked.

In malignant edema, which occurs usually at some of the openings of the body where the skin joins the mucous membrane, there is a very marked edematous swelling with, usually, redness of the skin, but with little or no pain. The constitutional symptoms are the same as in the other forms of anthrax.

In malignant pustule the pimple should be excised and

the parts about injected with carbolic acid. The application of powdered ipecac to the wound after excision is also recommended. The constitutional disease has been occasionally treated by means of an antitoxic serum, with seemingly good results.

MALIGNANT TUMORS. See CANCER; TUMORS; SARCOMA.

MALINGER, v. *mă-lĭng'gėr* [F. *malingre,* ailing, sickly —from *mal,* ill, bad; OF. *hingre* or *heingre*—from L. *æger* or *ægrum,* indisposed, sick: comp. Gael. *mall,* slow; *iongar,* a sore]: to feign illness; in *mil.* or *nav. lang.,* to protract or pretend disease in order to avoid duty: it is an offense punished severely in most armies (see FEIGNING OF DISEASE). MALIN'GERING, imp.: N. act of one who feigns himself sick in order to escape duty. MALIN'GERED, pp. *-lĭng'gėrd.* MALIN'GERER, n. *-gėr-ėr,* a soldier who feigns himself sick.

MALISON, n. *măl'ĭ-sn* [Norm. F. *malison,* a curse]: a curse; a malediction; execration; the opposite of *benison.*

MALKIN, n. *maw'kĭn* [from *Mall* or *Moll,* the shortened form for *Mary,* the kitchen-wench: comp. Gael. *mall,* slow; *ceann,* a head]: a mop made of clouts for sweeping an oven; a dirty wench.

MALL, n. *mawl, măl,* or *měl* [F. *mail,* a hammer—from L. *mallĕŭm,* a hammer: It. *malleo*]: a heavy wooden beetle; an instrument for driving anything with force; a public walk; a level shaded walk, so called from being originally a walk where they played with *malls* and balls: V. to beat with something heavy; to bruise. MALL'ING, imp. MALLED, pp. *mawld* (see MAUL). *Note.*—MALL, a public and shady walk, e.g., Pall *Mall,* London (pronounced Pell-Mell), said to be named from OF. *pale-maille,* a game in ancient times there played, in which a bowl or ball is struck with a mallet through a high arch of iron, etc., thus imitated in the modern game of croquet; It. *pallamaglio,* a stick with a mallet at one end for playing with a wooden ball; the game of mall—from *palla,* a ball, *maglio,* a hammer, a club—see Skeat: but it is also said to be derived from mid. L. *mallam,* the open square or court for the political meetings of the ancient Germans. See BALL.

MALLALIEU, *măl-la-lū',* WILLARD FRANCIS, D.D., LL.D.: Meth. Episc. bishop: b. Sutton, Mass., 1828, Dec. 11. He graduated at Wesleyan Univ. 1857; entered the ministry of the Meth. Episc. Church 1858; was connected with the New England conference 24 years; appointed presiding elder of the Boston district 1882; and elected bishop 1884. He has written: *The Why, When and How of Revivals* (1901); *The Fullness of the Blessing of the Gospel of Christ* (1903); etc.

MALLARD, n. *măl'ėrd* [F. *malart;* OF. *malard,* a drake]: the wild duck—often restricted to the male or drake: see DUCK.

MALLEABLE, a. *măl'lĕ-ă-bl* [F. *malléable*—from L. *malleab'ilĭs*, malleable—from *malleŭs*, a hammer: It. *malleabile*]: that may be flattened out or extended by hammering, or under a roller: applied to metals. MAL'LEABIL'ITY, n. *-bĭl'ĭ-tĭ* [F. *malléabilité*], or MAL'LEABLENESS, n. *-bl-nĕs*, property which certain metals possess of being reducible to thin leaves, either by hammering (hence the corresponding German word, *Hämmerbarkeit*) or by lamination between rollers. The order in which the malleable metals exhibit this property is as follows—gold, silver, copper, platinum, palladium, iron, aluminium, tin, zinc, lead, cadmium, nickel, cobalt. Gold far surpasses all other metals in malleability, being capable of reduction into films not exceeding the 200,000th of an inch in thickness; and silver and copper may be reduced to leaves of great tenuity. Although gold and silver present the property also of *Ductility* (q.v.) in the highest degree, there is no constant relation between the two properties; e.g., iron, although it may be reduced to extremely thin wire, is not nearly so malleable as gold, silver, or copper. MALLEABLEIZE, v. *măl'lĕ-ă-bl-īz*, to render any substance capable of extension as above. MAL'LEABLEIZING, imp. *-bl-ī-zĭng*. MAL'LEABLEIZED, pp. *-bl-īzd*. MALLEATE, v. *măl'lĕ-āt*, to extend as above. MAL'LEATING, imp. MAL'LEATED, pp.

MALLEACEÆ, *măl-lē-ā'sē-ē:* family of lamellibranchiate mollusks, regarded by many as a sub-family of *Aviculidæ* (see PEARL OYSTER), and of which the typical genus, *Malleus*, is remarkable—in an adult state—for elongation of the ears of the shell, the other part of which at the same time assumes a curiously elongated, wavy, or crumpled form. The shell thus acquires the name of HAMMER SHELL. The species are natives of the E. and W. Indies and of the South Seas.

MALLEMUCK, *măl'lĕ-mŭk* (corrupted to Mallemoke or Molly Mawk), [fr. Dutch *Mallemugge*, midges that fly around a light]: early Dutch name for the Fulmar; indefinitely applied to small albatrosses. See FULMAR.

MALLEOLAR, a. *măl-lē'ō-lėr* [L. *malleŏlus*, a small hammer—from *malleŭs, a hammer*]: in *anat.*, belonging to the ankle. MALLEOLUS, n. *măl-lē'ō-lŭs*, the projection on each side of the ankle formed by the lower end of the tibia on the inner side and of the fibula on the outer; an ankle; in *bot.*, a hammer-shaped slip; the layer by which gardeners propagate plants.

MAL'LERY, GARRICK: American ethnologist: b. Wilkesbarre, Pa., 1831, Apr. 23; d. Washington, D. C., 1894, Oct. 24. He was graduated from Yale College in 1850 and was admitted to the bar in 1853; he practiced law in Philadelphia until 1861, when he enlisted and served through the war in the Federal army, attaining the rank of lieutenant-colonel. He was executive officer of the Signal Service Bureau until 1876, when he was engaged

in a geological survey in Dakota, and in 1879 was retired from the army and appointed chief of the bureau of ethnology. Among his books are: *A Calendar of the Dakota Nation* (1877); *Israelite and Indian, a Parallel in Planes of Culture* (1889); *Greeting by Gesture* (1891); *Picture Writing of the American Indians* (1893); etc.

MAL'LESON, George Bruce: English historical writer: b. London 1825, May 8; d. there 1898, Feb. 28. He was educated at Winchester College, and from 1842 till 1877 served in India, at first in the army, and subsequently in government posts. His chief work, his *History of the Indian Mutiny* (1878-80), which commenced where the 2d volume of Kaye's *Sepoy War* left off, and in 1890 there appeared a joint edition of the two histories in six volumes, the 3d volume of Kaye's work being omitted and a new 6th one added. Other works by him are: *The Mutiny of the Bengal Army* (1857); *History of the French in India* (1868); *Studies from Genoese History* (1875); *Historical Sketch of the Native States of India* (1875); *Final French Struggles in India and Indian Seas* (1878); *History of Afghanistan* (1879); *The Decisive Battles of India* (1883); *The Battlefields of Germany* (1884); *Ambushes and Surprises* (1885); *The Indian Mutiny of 1857* (1890) and *Refounding of the German Empire* (1892); lives of *Clive* (1882), *Marshal Loudon* (1884), *Eugene of Savoy* (1888), *Prince Metternich* (1888), *Wellesley* (1888), *Dupleix* (1890), *Akbar* (1890), *Warren Hastings* (1894), and *Lakes and Rivers of Austria, Bavaria, and Hungary* (1897).

MALLET, n. *măl'lĕt* [F. *maillet*, a mallet, a dim. of *mail*—from L. *mallĕŭm*, a hammer]: a wooden hammer, chiefly used by stone-cutters and carpenters.

MALLET (or Malet), *mâ-lā'*, Claude François de: 1754, June 28—1812, Oct. 29; b. at Dôle in Franche-Comté. He was an eager supporter of the Revolution, rose to the rank of brigadier-general 1799, was intrusted with the government of Pavia 1805, but was removed from office because of his extreme republicanism. He returned to Paris, engaged in republican plots, and 1812, June, being imprisoned with some royalists, he formed with them a scheme for overthrowing the empire during Napoleon's campaign in Russia. He escaped from prison on the night of Oct. 23-24, liberated other conspirators, including two generals, and having previously gained the support of a battalion of the Parisian guards, he called them to arms, spreading among the soldiers, and affirming to Hullin, commandant of the city, that the emperor was dead in Russia, and that a provisional government had been established. Hullin expressed doubt; and Mallet drew a pistol and fired it in his face, wounding him; whereupon help rushed in and Mallet was made prisoner. He maintained resolute coolness to the last, and was shot with his principal fellow-conspirators.

MAL'LET, John William, A.B., M.D., PH.D., LL.D.: American chemist: b. Dublin, Ireland, 1832, Oct. 10. He was educated at Trinity College, Dublin, and at Göttingen, and emigrating to the United States in 1853 became assistant professor in chemistry at Amherst 1854-6 and later chemist to the United States geological survey of Alabama. In 1856-60 he was professor of chemistry at the University of Alabama. He entered the service of the Confederacy and was paroled in 1865 as lieutenant-colonel of artillery. The chair of sciences at the University of Louisiana was occupied by him in 1865-8 and since 1868 he has been professor of chemistry in the University of Virginia. He has contributed valuable scientific articles to the leading chemical periodicals.

MALLEUS, n. *măl'lĕ-ŭs* [L. *mallĕŭm*, a hammer]: one of the three movable bones, viz., the *malleus*, the *incus*, and the *stapes*, which traverse the tympanum of the ear —so named from its fancied resemblance to a hammer.

MALLOCK, *măl'ok*, William Hurrell: English author: b. Devonshire 1849. He was graduated from Balliol College, Oxford, and won the Newdegate prize in 1872. He has never entered a profession but has devoted himself entirely to literary work. His philosophical and sociological writings include: *Is Life Worth Living?* (1879); *Social Equality, a Study in a Missing Science* (1882); *Atheism and the Value of Life* (1884); *Property and Progress* (1884); *Labour and the Popular Welfare* (1893); *Studies of Contemporary Superstition* (1895); *Classes and Masses* (1896); *Aristocracy and Evolution* (1898); *Doctrine and Doctrinal Disruption* (1900); *Religion as a Credible Doctrine* (1902); *The Reconstruction of Belief* (1905); etc. He has also written several works of fiction, most of which deal with the same social and religious problems as the above works, including *The New Republic* (1877), in which he introduces many well-known contemporaries under thin disguises; *A Romance of the Nineteenth Century* (1881; new edition 1894); *The Old Order Changes* (1886); *A Human Document* (1892); *The Heart of Life* (1895); *The Individualist* (1899); *The Veil of the Temple* (1904); etc., and has published two volumes of verse and a translation of Lucretius' *On Life and Death* (1878). His philosophical works deal with the fundamentals of religion arguing for supernaturalism and aiming to show that science alone supplies no basis for religious belief; in his political and economic writings he has attacked the radical and socialistic theories and tendencies of the age.

MALLOPHAGA, n. plu. *măl-lŏf'ă-gă* [Gr. *mallos*, a fleece; *phagō*, I eat]: an order of insects, mostly parasitic upon birds.

MALLOTUS, n. *măl-lō'tŭs* [Gr. *mallōtŏs*, fleecy—from *mallos*, a lock of wool]: a small soft-finned fish, rather

larger than a sprat, inhabiting the coasts of northern seas; also called the capelan.

MALLOW, n. *măl'lō,* or MAL'LOWS, n. *-lōz* [L. *malva;* Gr. *malăchē*, mallows—from Gr. *malassō,* I soften, named from its emollient qualities], (*Malva*): typical genus of plants of nat. ord. *Malvaceæ,* having a 5-fid calyx, with an outer calyx of three leaves; stamens cohering in a tube; numerous styles cohering at the base; and numerous one-seeded carpels fixed in a whorl around an axis, and forming a separable orbicular fruit. The species, numbering about 16, are widely distributed through the northern hemisphere; they are herbaceous plants, more rarely shrubs.—COMMON MALLOW (*M. sylvestris*), growing on waysides and heaps of rubbish, is a perennial, with rather large, bluish-red flowers on erect stalks.—DWARF MALLOW (*M. rotundifolia*), has smaller whitish or reddish-white flowers. These two plants have a mucilaginous and somewhat bitter taste, and the leaves are used as emollient and demulcent medicine, a decoction of them being administered in cases of irritation of the pulmonary and of the urinary organs; and poultices made of them are very frequently used to allay external inflammation. Other species have similar properties.—MUSK MALLOW (*M. moschata*) has a faint musk-like smell.—The fibre of *M. crispa* is used in Syria for textile purposes, and the fibres of many species are probably fit for similar use, and for manufacture of paper. The young leaves of some are occasionally used as boiled vegetables. The mallow of Job xxx. 4 is probably saltwort (*Atriplex Halimus*).

MALMAISON, LA, *lâ mâl-mā-zōng':* village in France, about 7 m. w. of Paris; favorite resort of robbers during the 9th c., from which it derived its name, meaning 'evil spot.' After being owned by various families of no special note, it was bought by Josephine Beauharnais 1798, for $32,000. She enlarged and beautified the grounds; furnished the palace with a fine library and many works of art; and made it a brilliant centre of fashionable and literary society. After Napoleon here met and married her, she improved the place more magnificently, and through her charming manners and tact did much to help her husband in his ambitious political projects. After she became empress Malmaison was little occupied, until after her divorce, 1809, Dec. 16, when she retired thither, and kept up a semblance of its former courtly brilliance. She was often visited here by Napoleon, and after his defeat at Waterloo he spent several days here. Emperor Alexander and the King of Prussia also visited her during the first occupation of Paris. Here she died, 1814, May 29, and the place reverted to her son, Eugene Beauharnais. In 1826 it was bought by Haguerman, the Swedish banker, who reduced it to its original small dimensions; in 1842 it became the property

of Queen Maria Christina of Spain; and 1861 of Louis Napoleon, who restored it to some of its former beauty.

MALMES'BURY, WILLIAM OF: early English historian: b. probably in Somersetshire, about 1075 (some say 1095); d. 1142 (or later); conjectured to have been son of a Norman father and an English mother. He was educated in the monastery whence he derived his name, and of which he became librarian. Malmesbury's principal works, in Latin, are *De Gestis Regum*, history of the kings of England from the Saxon invasion to the 26th year of Henry I.; *Historiæ Novellæ*, from the 26th year of Henry I. to the escape of Empress Maud from Oxford; and *De Gestis Pontificum*, account of the bishops and principal monasteries of England from the conversion of Ethelbert of Kent by St. Augustine to 1123. The first was translated into English by the Rev. John Sharpe (Lond. 1815), and has been reprinted in Bohn's Antiquarian Library (1847). Of his other works, Gale has printed his *Antiquities of Glastonbury*, and Wharton his *Life of St. Wulstan*, in *Anglia Sacra*. Malmesbury gives proof in his writings of great diligence, good sense, modesty, and genuine love of truth. His style is much above that of his contemporaries.

MALMO, *mâl'mö:* town in Sweden, third in importance in the kingdom, principal town of the 'læn,' or district of Malmöehus (1,852 sq.m., pop. 413,421); on the Sound, nearly opposite Copenhagen. Pop. (1901) 62,954. Malmö is a busy seaport, maintaining an active steam and sailing communication with Copenhagen and all the great Baltic and German Ocean ports, and has manufactures of stockings, tobacco, soap, sugar, woolen goods, etc. The harbor in the n.w. has recently been deepened, admitting vessels drawing 18 ft. Malmö is the seat of a governmental department, and is a lively, pleasantly situated town. The ancient fortifications, mostly now converted into public walks, date from the time of Eric of Pomerania, who, 1434, erected strong lines of defense on the sea-side of the town, and built the castle which still remains. Malmö was an important place of landing and embarkation as early as 1259, and through the middle ages it was extensively visited by German and other traders. In 1523 it was the scene of the signing of the treaty of peace between the Danes and Gustavus Vasa.

MALM-ROCK, n. *mâm-rŏk':* a local term for a calcareous sandstone, which forms portions of the *Upper Greensand* in Surrey and Sussex—known also as forestone; a kind of brick, soft and yellow.

MALMSEY, n. *mâm'zĭ* [OF. *malvoisie*—originally from *Malvasia*, in the Morea]: a rich kind of grape. MALMSEY, or MALMSEY WINE (Malvasian wine; Fr. *vin de Malvoisie*): originally denoting the red and white wines of Napoli di Malvasia, in the Morea (one of the principal fortresses and commercial centres of the Levant

during the middle ages); afterward, applied to similar wines produced in Cyprus, Candia, and other islands of the Archipelago. Malmsey wines are of luscious sweetness, and have a most peculiar bouquet. The Malmsey wines of commerce are mostly the product of Teneriffe, the Madeiras, the Azores, the Lipari Isles, Sardinia, Sicily, and Provence. Malmsey is made from grapes grown on rocky ground, fully exposed to the sun, and left to hang on the vines for a month longer than those used to make dry wines, by which time they are partially withered.

MALONE: village, county seat of Franklin co., N. Y.; on the Salmon River, and on the New York Central & Hudson River and the Rutland railroads; about 275 m. n. by w. of Albany, and 12 m. from the boundary between the United States and Canada. It is situated at the northern foothills of the Adirondack Mountains, in an agricultural region, the chief products of which are hops, hay, and potatoes. The dairy products and poultry are important.

The place was named in honor of Edmund Malone (q.v.), an Irish barrister and writer, by his friend, William Constable, who, together with his wife, named many of the places located within the limits of the large tract of land in the northern part of New York known as 'The Macomb Purchase.' The first settlement was made in 1802, and its first inhabitants were mostly from Vermont and Ireland. In 1829-30 the people began considering the founding of an academy, and a number of the farmers pledged their farms as security for the payment of the debt incurred for the erection of the building, and Franklin Academy was established in 1831. The Northern Railroad, now Rutland Railroad, entered the town in 1851, and the New York Central in 1892.

Malone figured prominently in the war of 1812; and furnished a large number of soldiers, privates and officers, in the Civil war. The village was the scene of two Fenian (q.v.) gatherings.

The chief manufactures are paper, pulp, flour, lumber, leather, woolen goods, foundry and machine shop products, sash, doors and blinds, men's clothing, cigars, and dairy products. The electric light and gas plants and the waterworks are owned by private companies. Malone is the commercial centre for the greater part of Franklin and parts of the adjacent counties, a section having a population of about 50,000. There are two national banks capitalized for $300,000. The village has six fine churches, a high school building (formerly Franklin Academy), several grammar and primary schools, the county courthouse, jail, a state armory, and several wholesale establishments. The educational institutions, besides the public schools, are a state school for deaf mutes and St. Joseph's Academy. There are three public libraries, the Wead Library, 7,000 volumes, free to the

people of the school district, is housed in a beautiful building donated by Mrs. S. C. Wead; the Wadhams Library, 2,000 volumes, established and maintained by a literary society, free to all the people of the town of Malone (several school districts), and the Franklin County Historical Society library, established in 1902. There is a well-kept park, the 'Village green,' formerly the place of drill for the state militia. Malone was the home of William A. Wheeler, vice-president of the United States; John Larkin Thorndike, who built the Oroya and other railroads in Peru, S. A.; Ashbel P. Fitch, later of New York City, and a number of other noted people.

The government is vested in the president and board of trustees of the village under the general laws of the state of New York. The officers besides the president and six trustees are collector, treasurer, and police justice, all chosen by popular election, and the clerk and policemen who are appointed by the board of trustees. Since the Federal census of 1900 an adjoining manufacturing suburb has been incorporated in the village. Pop. (1910) 6,467.

MALONE, *ma-lōn'*, EDMUND: editor of Shakespeare: 1741, Oct.—1812, May 12; b. Dublin. He was educated at the University of Dublin, taking the degree B.A. He studied law; but becoming possessed of a considerable fortune, he went to London, and engaged in literary pursuits. In 1780 he published 2 vols. supplementary to Steevens' ed. of Shakespeare (1778). Malone's edition of Shakespeare (1790) was warmly received. The essays on the *History of the Stage*, and on the *Genuineness of the Three Plays of Henry VI.*, have been highly praised for acuteness, research, and respect for earlier editors. In 1796 he signalized himself as a literary detective by exposing the Shakespearian forgeries of the Irelands. He left materials for another ed. of Shakespeare, which appeared in 1821 (21 vols.). See *Life of Edmund Malone, with Selections from His Manuscript Anecdotes* by Sir James Prior (Lond. 1860).

MAL'ORY, Sir THOMAS: author of the English prose romance *Morte d'Arthur*. The work was finished in the ninth year of Edward IV.'s reign, 1470, and published by Caxton in black letter folio, in 1485. Little is known of the author; he may have been a priest; Caxton calls him 'a servant of Jesus both day and night,' and priests frequently were accorded the title 'Sir.' Probably he was a Welshman. See ARTHUR; MORTE D'ARTHUR; GRAIL, THE HOLY.

MALOT, *mâ-lō*, HECTOR: French novelist: b. La Bouille, near Rouen, France, 1830, May 20; d. 1907, July 18. He studied law, but abandoned it for a literary career, and in 1859 issued the first of a long series of successful novels. He was for a time newspaper correspondent in London, and literary critic of *L'Opinion Nationale*. Among his many books are: *Victimes d'Amour* (1859); *Sans*

Famille, published in English as *No Relations* (1878); *Conscience* (1888); *Complices* (1893); an autobiography, *Le Roman de mes Romans* (1896).

MALPIGHI, *mâl-pē'ghē,* MARCELLO: 1628, Mar. 10—1694; b. near Bologna, Italy: founder of microscopic anatomy. He held, at different periods, the professorship of medicine in Bologna, Pisa, and Messina. In 1691 he was summoned to Rome, and appointed chief physician and chamberlain to Pope Innocent XII.: there he died. He is now known chiefly for his discoveries in the anatomy of the skin, of the kidney, and of the spleen: the so-called *rete Malpighii* of the skin is no longer regarded as a special structure, but the *Malpighian bodies* or *corpuscles* of the kidney and the spleen still retain the name of their discoverer. He is remarkable also as the first who witnessed and examined with the microscope the circulation of the blood which Harvey a few years before had correctly inferred: he thus discovered the blood corpuscles. Among his most important works are: *De Formatione Pulli in Ovo; De Cerebro; De Linguâ; De Externo Tactûs Organo; De Structurâ Viscerum; De Pulmonibus;* and *De Structurâ Glandularum Conglobatarum.* His *Opera Posthuma,* ed. by Petrus Regis of Montpellier, contain a history of his discoveries and controversies, together with some autobiographical details.

MALPIGHIACEOUS, a. *măl-pĭg'ĭ-ā'shŭs* [see next entry]: in *bot.,* applied to hairs formed as in the genus MALPIG'HIA, *-pĭg'ĭ-ă,* which are attached by the middle, and lie parallel to the surface on which they grow. MALPIGHIACEÆ, *măl-pĭg-ĭ-ā'sē-ē,* natural order of exogenous plants; trees or shrubs, many of them climbing shrubs or lianas. They often exhibit an anomalous formation of stem, great part of the woody matter being deposited in lobed zoneless ribs. The leaves are simple, generally with glands on the stalks or under-side. The calyx is 5-partite, usually with very large glands; the corolla of five petals convolute in bud; the stamens generally ten, often monadelphous, a fleshy connective projecting beyond the anthers. There are about 600 known species, natives of tropical countries, chiefly of S. America, many having gaudy flowers. A few produce timber of bright yellow color. The bark of some species of the genus *Byrsonima* is astringent and medicinal, and at one time attracted attention as a remedy for pulmonary consumption: it is known as *Alcornoque Bark.* The fruit of some, as the BARBADOES CHERRY (q.v.), is pleasant.

MALPIGHIAN, a. *măl-pĭg'ĭ-ăn* [after the anatomist *Malpighi* (q.v.)]: in *anat.,* term applied to arterial tufts in the kidneys, to a special layer in the skin, and to some other anatomical structures.

MALPLAQUET, *mâl-plâ-kā':* village (pop. 400) in the department of Nord, France, 20 m. e. of Valenciennes,

and close to the Belgian frontier: notably for the bloody defeat of the French, under Marshal Villars, by the British and Dutch, commanded by the Duke of Marlborough and Prince Eugene, 1709, Sept. 11. The forces engaged consisted of more than 200,000 men, the allies having a slight superiority in numbers; and the loss on each side amounted to about 20,000 men, the French losing also many standards and cannon. Marshal Villars was severely wounded early in the engagement, and the command devolved on the old Marshal de Bouflers, under whom the French, after great slaughter, retreated in good order. The result of the conflict was the capture of Mons.

MALPRACTICE, n. *măl-prăk'tĭs* [L. *mălus*, evil, and Eng. *practice*]: evil practice; illegal or immoral conduct.

MALSTROM, *mâl'ström*, or MOSKÖESTROM ('whirling stream'): most famous whirlpool in the world; on the Norwegian coast, between Mosköe and Moskenäs, two of the Loffoden (q.v.) Isles. The tremendous current that rushes between the Great West Fjord and the outer ocean, through the channels between the Loffoden Isles, creates many other dangerous currents, such as the Galström, Napström, etc.; but these are not to be compared with the famous Malström. The current runs for six hours from n. to s., and then six hours from s. to n., producing immense whirls. The depth of the water has been ascertained to be about 20 fathoms, while immediately w. of the straits the soundings are from 100 to 200 fathoms. The whirlpool is greatest at high or low water; and when the wind blows directly against the current, it becomes extremely dangerous, the whole sea for miles around being so violently agitated that no boat can live in it for a moment. In ordinary circumstances, it may be traversed even across the centre without apprehension. The stories of ships, whales, etc., being swallowed up in the vortex, are fables; but doubtless a ship once fully under the influence of the current would either founder or be dashed upon the rocks, and whales have often been found stranded on the Flagstadt coast from the same cause.

MALT, n. *mawlt* [Ger. *malz;* Icel. *malt*, malt—from Icel. *melta*, to digest, to rot; *maltr*, rotten]: barley, or any other grain, rendered sweet by artificial germination, the sweetness being preserved by checking the germination and drying in a kiln (see BEER): v. to make grain into malt. MALT'ING, imp.: n. the act or process of making barley into malt. MALT'ED, pp. MALTSTER, n. *mawlt'stĕr*, one whose trade is to make malt. MALTHORSE, in OE., a horse employed in turning the stones for grinding malt—hence, a stupid drudge; a dolt. MALT-DUST, siftings of malt (see MALT REFUSE). MALT-LIQUOR, ale and porter; beer as made from malt. MALT'MAN, the workman engaged in making malt. MALTIN, n. *mawlt'ĭn*, a

nitrogenous ferment said to exist in malted barley and other cereals, much more active than *diastase.* MALTOSE, n. *mawlt'ōs,* the sugar of malt; the sugar produced by the action of diastase upon starch.

MALTA, *mawl'ta:* island and British possession, chief island of the Maltese group, in the Mediterranean, 17¼ m. long by 9¼ broad; 95 sq.m. Gozo (q.v.), smaller island 4 m. from Malta, is 9 m. long, 5 m. wide; 20 sq.m. Malta is of late Eocene formation, the prevailing rocks being sandstone and limestone; and it occupies a central position in the Mediterranean Sea, about 54 m. from the Sicilian coast, and about 200 from Cape Bon, on the African coast. From its position, and from the enormous strength of the fortifications, Malta is a possession of immense value to any commercial nation with a navy strong enough to protect it from blockade. Consequently Malta is one of the most important, after India, of the British dependencies. Possessing one of the most splendid harbors in the world, with such even depth that the largest vessels may anchor alongside the shore, the island forms at once an admirable station for a fleet to command the Mediterranean—a military focus, where a force protecting the route to Egypt and India can be concentrated—and a useful entrepôt for receiving the manufactures of Britain, which the small craft of the Mediterranean carry to every point on the shore of that inland sea and its tributaries. Between it and Gozzo, or Gozo (q.v.), lies the small island Comino; and off this last, the two islets Cominotto and Filfla, the former showing a rocky crest, the latter a venerable church; while elsewhere, round the shores of Malta and Gozo, a few rocks stud the sea, sustaining each a few fishermen, and affording herbage for goats on their moss-grown summits; among these are—Pietro Nero, or Black Rock; Scoglio Marfo, Salmonetta, and the *Hagira tal general,* or Fungus Rock, where grows the famed *Fungus melitensis* (see CYNOMORIUM). Malta and Gozo, with their adjacent islets, form a crown colony of Great Britain, a compact little realm, celebrated in history, possessing a magnificent capital in Valetta, and, from the fact that, owing to peculiar circumstances, vast contributions came to Malta from all Roman Catholic Europe, adorned with public buildings, institutions, and works out of all proportion to its intrinsic importance.

In physical conformation, Malta is comparatively low; its highest point is near Casal Dingh, about 750 ft. above sea level: Citta Vecchia, the ancient capital, is on a steep height near. On the w. and s. precipitous cliffs 300 to 400 ft. high rise from the sea. The surface is diversified by hill and dale, the land being intersected by parallel valleys, from s.w to n.e., the most considerable of which is the vale called Melleha. Across the island stretch the Ben-jemma hills or crags, and many spurs branch from them, which give picturesqueness to

the scenery. From the spongy nature of the limestone of which the island is composed, much of the rain falling in the wet season soaks in, and being evaporated through the thin alluvial covering by the heats of summer, keeps the ground moist, and gives it a fertility not to be expected from so scanty and poor a soil. So thin, indeed, was the original surface soil, that considerable quantities of earth were imported into Malta from Sicily. The productiveness of the soil must be attributed also to the quantity of carbonate of lime held in a minutely divided state above the entire face of the rock.

Malta shows no signs of volcanic formation; but the action of the sea among its cliffs has hollowed out grottoes and caverns in almost every direction, some of considerable extent. The birds of Malta are renowned for splendid plumage, and its bees produce an unexcelled aromatic honey. Large crops of wheat and potatoes are raised, early varieties of the latter being largely exported to England; maize, barley, cotton, clover, oranges, figs, grapes, carob beans, and peaches and other fruits are also grown. Filigree ornaments and a little cotton are manufactured. Sheep and goats are kept, with smaller number of cattle, mules, asses, and horses. The language of the people is a corrupt dialect of Arabic, with a strong admixture of Italian and other words; some authorities, however, connect it with the ancient Phœnician. The native population believe themselves to be of Phœnician descent. From the time of the settlement of the Knights of St. John down to quite recently Italian was the official language; but it has been superseded by English. Most of the educated Maltese speak Italian, and some speak English; the peasantry as a rule know neither the one nor the other. The Maltese are a sober, industrious race of people, though often quick-tempered and ignorant. They are proud of their island home—they love to call it 'the flower of the world'—and are devout Roman Catholics. Legislation is carried on by 6 official and 14 elected members, the British governor, with the power of veto, being president. There is also an executive council, consisting of the governor as president, 7 official members, and 3 nominated by the governor from among the elected members of the legislative chamber; the crown retains the right to legislate also through orders in council. There is no direct taxation in Malta.

It is thought by some that Malta was the *Hyperion* or *Ogygia* of Homer, but there is little doubt that the Phœnicians colonized the island at a very early date, probably B.C. 16th c. Before they were dispossessed by the Greeks, B.C. 736, they had developed considerable commerce. The Greeks called the island *Melitas:* they were driven out by the Carthaginians about B.C. 500. As early as the first Punic war, it was plundered by the Romans, but did not come finally into their possession until B.C. 242. They valued it highly as a commercial

entrepôt; also for its cotton and linen cloths, fabrics then, as now, manufactured of wonderful fineness by the Maltese. The island remained under its old laws, governed by a proprætor, subject to the prætor of Sicily. On the n. coast is the port of St. Paul, where tradition fixes the scene of the wreck of the ship carrying that apostle to Rome. On the division of the empire, Malta followed the fortunes of the eastern division. During the 5th c., it fell successively under the Vandals and Goths, whose barbarism nearly annihilated its commerce. In 533 Belisarius recovered Malta to the Byzantine empire, in nominal union with which it remained more than three centuries; but its prosperity had departed, and its civilization almost vanished amid constant local feuds. In 870 the Arabs destroyed the Greek power in Malta, and fortified the harbor as a station for their corsairs. Count Roger, of Sicily, drove out the Arabs 1090, and established a popular council for the government of the island, composed of nobles, clergy, and representatives elected by the people. This council, in a more or less modified form, subsisted 700 years. Under a marriage contract, Malta passed to the German emperor, who constituted it a marquisate, but it had ceased to be a place of trade, and was merely a garrison of more expense than value. Charles of Anjou, after overrunning Sicily, made himself master of Malta, which clung to the French even after they had been expelled from Sicily; but after a time the houses of Aragon and Castile successively held the island. Subsequently, Emperor Charles V. took possession of Malta, and, 1530, granted it with Gozo and Tripoli, in perpetual sovereignty, to the knights of the order of St. John of Jerusalem, from whom the Turks had recently captured their great stronghold at Rhodes. The knights raised by degrees the stupendous fortifications which render Malta so powerful, and, moreover, spent their great income in beautifying the island in every way. Meanwhile, they rendered incessant services to Christendom in the chastisement of the ferocious Barbary pirates. To revenge these acts, the Turks brought immense forces against Malta 1557, and again 1565. The latter siege was carried on by the Sultan Solyman himself, with the flower of the Ottoman army; but the Grand Master La Valette opposed a heroic resistance, and the sultan was forced to re-embark with the loss of more than 25,000 of his best troops. The defenders lost 260 knights and 7,000 Maltese soldiers, and their gallantry was the theme of admiration throughout the world. After this siege the knights built Valetta. In 1571 they, with the Maltese, behaved most courageously at the battle of Lepanto (q.v.), where the Turks lost 30,000 men. Though waging perpetual war with the Moslem, the knights continued in possession of Malta until 1798, when, overcome by Bonaparte's treachery and disorganized by internal quarrels, the order surrendered

their noble fortresses to the French. After pillage and infamous treatment by the French republican forces, the Maltese rose in a few months against their oppressors, and after a siege of two years, British auxiliaries arriving, the French garrison of Valetta capitulated to the English general Pigot. The treaty of Amiens stipulated that Malta should be restored to the knights of St. John; but the Maltese loudly protested against such an arrangement, and preferred the peaceful government of Great Britain. The British government consequently refused to make the transfer, doubtless appreciating also the vast value of their new possession, and Napoleon made the refusal one of his grounds for the resumption of hostilities. The congress of Vienna recognized Malta as a British dependency, the condition in which it has since remained. Pop. (1901) 188,141.

MALTA FEVER: an infectious disease, somewhat resembling typhoid fever, which prevails in the islands and along the shores of the Mediterranean Sea; its various names—Naples fever, Gibraltar fever, Mediterranean fever—bear witness to this prevalence; it is also known as rock fever and undulant fever. It has been observed in the West Indies, China, the Philippines, and elsewhere in the tropics and sub-tropics. The disease begins gradually with slowly rising fever, headache, loss of appetite, and malaise. The fever does not rise very high and the symptoms as a rule are not very severe, but the disease continues for two or three weeks; then the temperature falls and convalescence apparently sets in; but in a few days there is a chill, the fever rises, and the other symptoms return. This relapse lasts usually a week or two longer than the first attack, and then subsides; but after an intermission of from two or three days to a week or two a third attack takes place. And so the disease may run on, with alternate remissions and relapses, for several months or even a year or more. The disease is seldom fatal, though occasionally a malignant attack is observed. No curative treatment is known. When the fever is high the diet should be liquid and spare, but in the remissions and in mild cases when the fever is slight, more solid food, such as eggs, fish, and chicken should be given to sustain the strength and prevent the anemia which is very apt to follow the disease. The cause of the fever is a special micro-organism, *Micrococcus melitensis.*

MALTA, KNIGHTS OF. See ST. JOHN OF JERUSALEM, KNIGHTS OF; MALTA.

MALTE-BRUN, *mawl-te-brŭn'*, F. *mâlt-brŭng'* (properly MALTHE BRUUN), KONRAD: eminent geographer: 1775, Aug. 12—1826, Dec. 14; b. Thysted, in Jutland. He studied in Copenhagen, and at the outbreak of the French Revolution embraced with ardor the liberal cause, so that, being prosecuted for political publications, he was twice compelled to flee from Denmark, and

finally, 1800, was condemned to perpetual banishment from his native country. He sought refuge in Paris, where he maintained himself by teaching and literary labors. In 1808 he began *Annales des Voyages, de la Géographie et de l'Histoire* (24 vols.), concluded 1814. In 1818 he began, with Cyries, *Nouvelles Annales*, etc. He devoted his pen to the support of Napoleon during his reign, and 1815 became connected with an ultra-royalist journal, and a defender of the theory of legitimacy adopted by the congress of Vienna. His principal work is *Préeis de la Géographie Universelle* (8 vols. Par. 1824-1828, with atlas). He took part also in *Dictionnaire Géographique Universelle* (8 vols. Par. 1821), and was secretary of the Geographical Society of Paris.—His son, VICTOR ADOLF MALTE-BRUN (b. 1816), one of the most eminent living geographers of France, has succeeded his father as secretary of the Geographical Society of Paris.

MALTESE, n. *mawl-tēs':* the natives of the island of *Malta* in the Mediterranean: ADJ. pertaining to Malta.

MALTESE CROSS, *mawl-tēz':* cross of eight points, of the form worn as a decoration by the Hospitallers (q.v.) and other orders of knighthood.

MALTESE' DOG: kind of small spaniel, with roundish muzzle, and long, silky, generally white hair. It is useless, except as a lap-dog; but is a very ancient breed, figured on Roman monuments, and noticed by Strabo.

MALTHA, n. *măl'thă* [L. and Gr. *maltha*, kind of mineral fat from Kirwan, resembling wax, probably composed of paraffine]: slaggy mineral pitch, as distinct from fluid *petroleum*, and from solid *asphalt:* see ASPHALT: BITUMEN: DEAD SEA.

MALTHUS, *măl'thŭs*, THOMAS ROBERT: scientific writer on the principle of population: 1766—1834, Dec. 29; b. in the county of Surrey, England. He was well connected, and graduated with honors 1788, at Jesus College, Cambridge, of which he became a fellow. He became clergyman of a small parish in his native county, and divided his time between his cure and the university libraries. In 1799 he travelled through Sweden, Norway, Finland, and part of Russia, making notes. Next year he visited France and other portions of central Europe. Although Malthus has the reputation of a bold theorist, the charm of his writings consists in his knowledge, gained by observation, of how men have existed and acted in various parts of the world and under diverse conditions. This, with his knowledge of human nature, and his sagacity and accuracy in the use of details, gave his writings influence over public opinion, and made his books readable even to those who made war on his conclusions. In 1798 he published his *Essay on the Principles of Population as It Affects the Future Improvement of Society*—in subsequent editions so greatly en-

larged and enriched that it can hardly be identified with its first edition. His predominant idea was evidently suggested by Hume's essay on the populousness of ancient nations, in which vague statements as to vast multitudes of human beings subsisting in any place, or wandering from place to place, are brought to the test of the means of subsistence at their disposal. Malthus set himself to finding out how the relation of population to the means of sustenance could affect the future of the world. The result was appalling. The human race was found to increase at something like geometrical progression; while the fertility of land, by bringing in waste, and improving the methods of agriculture, increased in only an approximately arithmetical proportion. Hence, population at its natural rate of increase would soon surpass the means of subsistence. The final check to the growth of population is the want of food; other natural checks are poverty, exposure, unwholesome toil, and disease. Of preventive checks, the only one recognized by Malthus was, that a man should not marry till he could support a family: emigration and free trade, however, would palliate the disadvantages of swift growth of population. Malthus' work was directed against the old view that the chief duty of a state was to increase its population as much as possible; also against the optimist theory of Rousseau and others, that misery was mainly the fault of bad government: it was indeed a natural reaction from the superficial optimism which Rousseau had brought into vogue. He sought to prove that the undue growth of population is an inevitable and all but insurmountable cause of poverty and misery. The influence of Malthus' teaching was great on many economists who did not accept his pseudo-mathematical theory, and it contributed to the great poor law reform of 1834, which emphasized the duty of self-support and of providence for the future, and the responsibilities of parentage. This is indeed the only proper lesson to be drawn from Malthus' theory. Malthus, personally one of the most amiable, just, and cultured of men, has been fiercely abused both for his teaching, and for inferences from it which he himself never made and would have utterly repudiated. Appointed professor of modern history and political economy at the E. India company's college of Haileybury 1805, Malthus filled his chair with great repute until his death at Bath. See Bonar's *Malthus and His Work* (1885).

MALTHUSIAN, a. *măl-thū'zĭ-ăn:* pertaining to *Malthus* (q.v.), who taught that population increased more rapidly than the means of subsistence, and that consequently the undue increase should be checked, and early marriages discouraged.

MALTREAT, v. *măl-trēt'* [F. *maltraiter,* to treat ill: but simply L. *mălĕ,* badly, and Eng. *treat*]: to abuse; to

treat roughly or rudely. MALTREAT'ING, imp. MALTREAT'ED, pp. MALTREAT'MENT, n. *-mĕnt*, ill-usage; abuse.

MALT REFUSE, or MALT WASTE: products of two kinds: (1) the *cornings* or small shoots and radicles of the germinated grain, separated before the malt is used by the brewer, often called *Malt Dust* and *Kiln Dust;* (2) the exhausted malt, after it has been used by the brewer, called *Draff*. Both are of use for the feeding of cattle, but the first kind is the most nutritious, being rich in nitrogenous substances, which the brewer extracts from the malt used by him; draff, however, is advantageously employed, with turnips, for the feeding of dairy cattle. Malt dust is used also as a manure, chiefly as top dressing, and is very fertilizing and rapid in its effect.

MALUM IN SE: a term denoting that an act is evil in itself, in counter-distinction to the offenses that, while not naturally evil, have become so because of the fact that they have been specifically prohibited.

MALURUS, *ma-lūr'ŭs:* genus of Australian birds, giving its name to a large subdivision of the family *Sylviadæ*, in which are many Asiatic and African species, and some natives of S. Europe. They have generally a long tail; in some, very long, as in the EMEU WREN of Australia, in which it is more than twice the length of the body, the shafts of its feathers loosely fringed on each side. The Emeu Wren (*Stipiturus malachurus*) is a very pretty little bird, living chiefly among long grass. One of the most noted *Maluri* is *M. cyaneus*, the BLUE WREN or SUPERB WARBLER of Australia, gorgeously attired in black, blue, white, and brown: it haunts scrubby brushwood.

MALUS (classical name of the apple-tree): Order, *Pamaceæ*. APPLE; CRABAPPLE. Trees with scaly bark; in dwarf forms, but 10 to 15 ft. high, but free growing forms may reach a height of 40 ft. or more. Leaves alternate, simple or in rare forms compound, in some cases incisely lobed, deciduous. Stipules filiform, deciduous. Flowers perfect, regular, showy, white or more or less red, especially in bud, appearing just after the leaves in terminal cymes on spurs or sometimes on slender twigs; fragrant. Calyx lobes five, imbricated in bud, acuminate to somewhat obtuse, deciduous or persistent and connivent (closed) or reflexed (open). Stamens numerous, in three series. Ovary commonly five-celled, inclosed in a fleshy torus which becomes the edible portion of the fruit, the ovary forming the core. The division of the ovary from the torus is especially distinct in *M. coronaria* and *M. angustifolia*. Styles not free as in pear, but more or less united at base. Ovules ascending, commonly two in each cell, sometimes three or more. Fruit a pome, distinguished from the pear tribe by having flesh free from grit cells. Carpels papery. Seeds one or two, some-

times more, acute to somewhat obtuse; when fresh from the fruit and moist they are light brown to dark brown or reddish brown, and lustrous, in which condition the characteristic differences of varieties in seed color are most apparent.

Malus includes numerous old world species and three or four of American origin. The following synopsis includes the principal species which are now found in America. These are treated more fully under APPLE.

Conspectus of principal apples known to American horticulture:

A. Calyx lobes persistent on mature fruit: I. American species.—1, *M. angustifolia,* wild crabapple of the Atlantic and Southern states; 2, *M. coronaria,* wild crabapple of the basins of the Ohio, Upper Mississippi and Missouri; 3, *M. iocnsis,* a western form of *M. coronaria.* II. Old world species.—4, *M. spectabilis,* Chinese flowering apple; 5, *M. ringo,* a bush or small tree from Japan; 6, *M. malus,* the apple of common cultivation; *M. prunifolia,* the Siberian crab of fruit growers, undoubtedly a hybrid race derived from the crossing of *M. malus* and *M. baccata;* in some individuals the calyx is partly or wholly deciduous.

B. Calyx lobes deciduous from mature fruit: I. American species.—8, *M. rivularis,* the Oregon crabapple. II. Old world species.—9, *M. toringo,* dwarf Japan crab, closely allied to *M. baccata* and *M. floribunda;* 10, *M. floribunda,* a Japanese shrub with rose red flowers; 11, *M. baccata,* the primitive Siberian crab of Siberia, Manchuria, and the Himalayan region; 12, *M. prunifolia,* the Siberian crab of commerce and its kin (see 7); in some individuals the calyx is partly or wholly persistent.

MALUS, *mâ-lüss',* ETIENNE LOUIS: 1775, June 23—1812, Feb. 23; b. Paris: engineer. He studied mathematics and military engineering at Mézières and at the Polytechnic School, Paris; entered the army as captain 1797; took part in the capture of Malta and Jaffa; was promoted chief of battalion 1799; was commissioned by the emperor to prepare plans for enlarging and improving the fortifications and harbor at Antwerp 1804; had charge subsequently of the reconstruction of the fortification at Kehl: and became mayor, member of the French Academy, and examiner at the Polytechnic School 1810. He discovered the polarization of light, and his memoir, *Theory of Double Refraction,* was awarded an academy prize. He also published *Traité d'Optique* (1810); *Essay on the Measurement of the Refractive Force of Opaque Bodies; Remarks on Some New Optical Phenomena; Phenomena Accompanying Refraction and Reflection;* and *The Axis of Refraction of Crystals.*

MALVA, n. *măl'vă* [L. *malva,* the herb mallows]: mallows, a common plant found in most countries of the world, and much used medicinally. MALVACEÆ, n. plu. *măl-vā'sē-ē,* the mallow tribe or order of plants (see be-

low). MALVA'CEOUS, a. *-shŭs*, pertaining to mallows: see MALLOW.

MALVACEÆ, *măl-vā'sē-ē:* natural order of exogenous plants, of which about 1,000 species are known, chiefly tropical, and most abundant in America, though the most important species belong to the old world. They are herbaceous plants, shrubs, occasionally in tropical countries trees; with alternate entire or lobed leaves; the pubescence, if any, starry; the flowers showy, generally on axillary stalks; the calyx usually of five sepals or five segments, often with an epicalyx; the petals generally five, hypogynous, twisted in bud, the stamens numerous, united by their filaments; the ovary consisting of a number of carpels around a common axis, the styles generally five, the ovules few or many; the fruit dry or fleshy. The plants of this order have great general similarity both in appearance and in properties and products. All contain a mucilaginous substance in great quantity, abundant particularly in the roots of the perennial herbaceous species. This mucilaginous quality makes some of them very useful in medicine as emollients and demulcents.

MALVERN HILL, *măl'vėrn,* BATTLE OF: near Richmond, Va., 1862, July 1; between about 90,000 Union troops under McClellan, and 60,000 Confederate under Lee. It was the last of the engagements known as the 'seven days' battles,' the chief of which were those of Mechanicsville, June 26; Cold Harbor, June 27; Savage's Station, and Frazier's Farm, June 30; and Malvern Hill. On the morning of July 1 the Union forces were posted on this hill, protected by steep gullies in front, the woods on the flank, and 60 guns skilfully posted to concentrate their fire. This strong position the Confederates, who had been repulsed at Frazier's Farm the day before, now tried to take by storm. At about 9 A.M. Lee ordered D. H. Hill, commanding the Confederate right, to attack the Union forces. Hooker met the attack with so destructive an artillery fire that Hill abandoned the attempt. Next Lee sent Magruder with 20,000 men to make a second attack, in which D. H. Hill joined. They, too, were repulsed, Magruder losing, in 1½ hours, about 500 killed and 2,000 wounded, and Hill 336 killed and 1,373 wounded. Besides these, Jackson's main division, to which Hill belonged, being within distant range of the Union guns, though itself not actively engaged, lost 41 killed and 363 wounded. The total Confederate loss on this day, therefore, was about 900 killed and 3,500 wounded, the bulk of which was sustained by Hill's and Magruder's divisions, which at the beginning numbered only about 28,000 men. The Union loss was about 375 killed and 1,800 wounded. The Union victory was not followed up next day, but on the night following McClellan retreated to Harrison's Landing, and thence in August to the Potomac. Lee held his ground a week, then retired to Richmond,

the siege of which he had broken and so gained his end. See CHICKAHOMINY, BATTLES OF.

MALVERSATION, n. *măl'vėr-sā'shŭn* [F. *malversation*—from L. *mălĕ*, badly; *versātĭōnem*, a turning round, a changing: It. *malversazione*]: evil conduct; improper behavior; fraudulent practices.

MALWA, *mawl'wâ:* ancient kingdom of India, lying mostly n. of the Nerbudda, and s.w. of the valley of the Ganges; an uneven plateau 1,500 to 2,500 ft. above sea-level. It is now divided into a number of protected states, roughly co-extensive with the w. portion of the central India agency.

MAMALUKES, n. plu. *măm'ă-lûks*, or MAM'ELUKES, or MAMLOUKS, or MEMLOOKS [Ar. *mamlúk*, a purchased slave]: slaves of the beys or provincial governors of Egypt, brought from the Caucasus, and who formed their armed force. When Genghis Khan desolated great part of Asia in the 13th c., and carried away a multitude of the inhabitants for slaves, the sultan of Egypt bought 12,000 of them, partly Mingrelians and Tcherkesses, but mostly Turks, and formed them into a body of troops. But they soon found their own power so great that, 1254, they made one of their own number sultan of Egypt, founding the dynasty of the Baharites, which gave place to another Mamaluke dynasty, that of the Borjites, 1382. The Caucasian element predominated in the first dynasty, the Tartar element in the second. In general, they formed able and energetic rulers, and Egypt under their sway arrived at prosperity and power to which she had been a stranger since the days of Sesostris. Selim I., who overthrew the Mamaluke kingdom 1517, was compelled to permit the continuance of the 24 Mamaluke beys as governors of the provinces. This arrangement subsisted till the middle of the 18th c., when the number and wealth of the M. gave them such a preponderance of power in Egypt that the pasha named by the Porte was reduced to a merely nominal ruler. The number of them scattered throughout Egypt was between 10,000 and 12,000 men. Their number was kept up chiefly by slaves brought from the Caucasus, from among whom the beys and other officers of state were exclusively chosen. Their last brilliant achievements were on the occasion of the French invasion of Egypt, and during the time immediately following the retirement of the French. At this time, Murad Bey stood at their head. But in 1811 they were foully massacred by Mohammed Ali (q.v.), afterward viceroy of Egypt.

MAME, *măm*, ALFRED HENRI ARMAND: French publisher: b. Tours, 1811, Aug. 17. He was brought up in the large printing establishment founded by his father in Tours, and with his cousin, Charles Ernest M. (1805, Nov. 4—1883, Feb. 8), succeeded to the business 1833. In 1845 Alfred became sole proprietor, and by his personal energy raised the establishment to one of great importance. Every feature of book-making and book-

selling was introduced, and with some 1,200 employés about 20,000 vols. bound and unbound were produced daily. M. made specialties of devotional and liturgical works, editions of the classics, elementary treatises on science and education, and, after 1854, of richly illustrated works, such as the Bible with Doré's illustrations, *La Touraine*, and *Chefs-d'Œuvre de la Langue Française*. He received prizes for his book exhibits at the London exhibition 1851, and at Paris 1855 and 67, and at the latter was awarded one of the special prizes of 10,000 fr., offered to the model establishment in which the greatest social harmony and comfort prevailed among the workmen. He became a commander in the Legion of Honor, 1877.

MAMELON, n. *măm′ĕ-lŏn* [F. *mamelon*, a teat—from L. *mamma*, a breast, a swelling or protuberance, as on the bark of a tree]: in *mil.*, a slightly rising rounded mound, raised as a fortification.

MAMELUCO, *măm-ē-lū′kō* or *mâ-mā-lô′kō:* in some S. American languages, denoting a child of a negro father and an Indian mother.

MAMERS, *mâ-mār′:* small town of France, dept. of Sarthe, 25 m. n.n.e. of Le Mans. Coarse linens, calico, beer, and leather are manufactured. Pop. 6,000.

MAMIANI, *mâ-mē-â′nē*, Terenzio, Count: Italian philosopher and statesman: 1801–85; b. Pesaro. Having been prominent in the futile revolutionary outbreak at the accession of Gregory XVI., M. sought safety in flight to Paris, whence he promoted with energy the revolutionary tendencies of Italy. In 1846, on the accession of Pius IX., he declined the proffered papal amnesty, as involving disavowal of his former principles; but on its being unconditionally granted, he availed himself of it, and even formed part of the papal ministry on the promulgation of the constitution. The inconsistent policy of the pope compelled him to resign his post, and he withdrew to Turin, where he founded, with Gioberti, a society for promoting the union of Italians. On the flight of Pius IX. from Rome to Gaeta, he re-entered the political arena, and was for a short period foreign minister in the revolutionary cabinet of Galetti. On the fall of Rome, he retired to Genoa; 1856, he was returned member of the Sardinian parliament, and 1860 entered Cavour's ministry as minister of instruction. He was appointed ambassador to Greece 1861, to Switzerland 1865. His chief works are: *Del Rinnovamento della Filosofia antica Italiana* (1836); *Poeti dell' età Media* (1842); *Dell' ontologia e del Metodo; Principi della Filosofia del Diritto.* In 1870, he became editor of a new quarterly review *Filosofia delle Scuole Italiane.*

MAMILLA, n. plu. *mă-mĭl′lă* [L. *mamilla*, a pap, a teat—from *mamma*, a breast: F. *mamelle*, a teat, a breast]: in *bot.*, little granular prominences on the surface of certain pollen. Mam′illated, a., or Mam′millated, a. *-lā-tĕd*, applied to a wart-like projection which surmounts a hemispherical body: see Mammillary.

MAMMA, n. *măm′mă* [L. *mam′ma*, a breast]: in *med.*, a nipple; a teat; a breast.

MAMMA, sometimes MAMA, n. *mă-mâ′* [L. *mămma*, the breast, a nipple or teat: It. *mamma;* F. *maman;* Dut. *mamme;* Fin. *mamma;* W. *mam*, mamma, mother: an imitative word]: familiar word for mother used by all ranks above the lowest—often contracted by children into MAM, *măm*, and MA, *mâ* (in more dignified usage the terms for parents are father and mother). MAMMAL, n. *măm′măl*, an animal that suckles its young. MAM′MALS, n. plu. *-mălz*, or MAMMALIA, n. plu. *măm-mā′lĭ-ă*, the great class of animals which suckle their young by teats or nipples (see below). MAMMA′LIAN, a. *-lĭ-ăn*, pertaining to the mammalia. MAM′MARY, a. *-mėr-ĭ*, pertaining to the breasts. *Note.*—The true origin of MAMMA is purely imitative in the various languages in which it occurs, being the earliest natural attempt of the infantile voice to articulate sounds in the repetition of the syllable MA or MAM.

MAMMA′LIA: highest class of the animal sub-kingdom *Vertebrata* (q.v.). This class includes man and all the animals which resemble him in the most important points of their organization; and it is naturally placed at the head of the animal kingdom, because (independently of man) it contains the animals which manifest the highest intelligence and possess the most complex organization.

The most distinctive character of the M. is their mode of development and of nourishment during the earliest period of life. They all are brought into the world alive (viviparous), not merely, as in certain (ovo-viviparous) reptiles and fishes, by the retention and hatching of the egg within the oviduct, but by the formation of a new connection between the embryo and its mother, while the former lies within the maternal cavities, so that provision is made for its development before birth, not, as in birds, etc., by the large yelk (see DEVELOPMENT OF THE EMBRYO), but by a constant supply of nutriment direct from the maternal blood. In mammals, the ovum, on quitting the ovary, is extremely minute, and the materials of the yelk serve only to support the embryo during its very earliest period. After undergoing certain changes in the passage through the Fallopian tube or oviduct, the ovum reaches the uterus or womb, and connects itself by a set of root-like tufts of vessels with the maternal vessels. These tufts absorb from the mother's blood the ingredients necessary for support of the embryo, while they convey back to it the effete particles of the embryonic tissues. Through this organ, which simultaneously increases in size with the embryo, and is named the placenta, the young animal, except in the lowest orders of the class—viz. Marsupialia (q.v.) and Monotremata (q.v.)—derives its nutriment during the whole period of Gestation (q.v.); while in the two orders just named, no vascular connection of the ovum with the uterus of the mother is formed, the ovum being simply

retained for a time within the uterus, and the requisite nourishment for the development of the young animal being obtained by absorption through the membranes of the ovum until birth, which takes place very early in development. The mammalian embryo agrees with that of birds and reptiles in possessing an Amnion (q.v.) and Allantois (q.v.). In all mammals is found the same provision for nourishing the animal during the period immediately after its birth—viz., the Milk (q.v.), a fluid secreted by peculiar glands, called the *mammary glands*, which become greatly developed in the female during the periods of gestation and lactation; and as this is found in no other class, it is the character by which the entire group is most obviously defined, and from which it derives its name: see MAMMA.

The mammary glands exist in both sexes, but except in very rare cases, they secrete milk in the female only. Their number is never less than two, and, when more, is generally nearly proportional to that of the young produced at each birth. In monkeys, the elephant, the goat, the mare, etc., there are two; in the cow, stag, and lion, four; in the cat, eight; in the rabbit, ten; in the

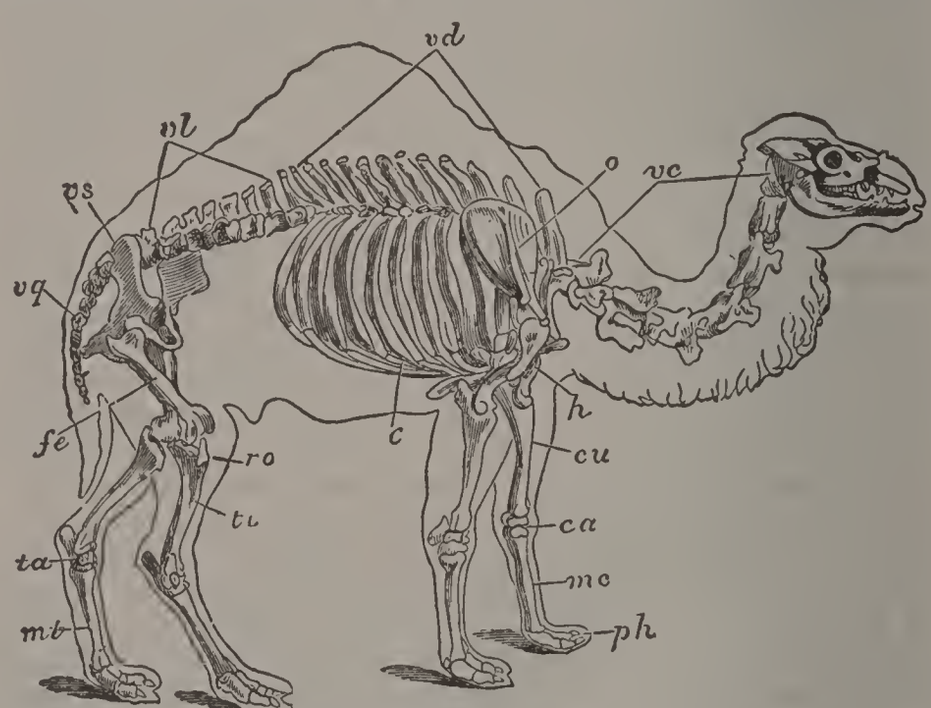


Fig. 1.—Skeleton of the Camel:

vc, cervical vertebræ; *vd*, dorsal vertebræ, *vl*, lumbar vertebræ; *vs*, sacral vertebræ; *vq*, caudal vertebræ; *c*, ribs; *o*, scapula; *h*, humerus; *cu*, bone of forearm (radius and ulna fused together); *ca*, carpus, or wrist-bones; *mc*, metacarpus; *ph*, phalanges; *fe*, femur; *ro*, patella; *ti*, tibia; *ta*, tarsus; *mt*, metatarsus.

pig, generally twelve; and in the rat, ten or twelve. These glands are often blended together, as in the cow; and their number is then indicated externally by that of the nipples or teats. Their position also varies: in the monkeys and bats, and in the Sirenia (see MANATEE), they are on the thorax, as in man; in most of the carnivorous animals, they are on the abdomen as well as on the

thorax; while in the mare, cow, sheep, etc., they are still further back, near the hip-joint.

The *skin* in the greater number of M. is covered with hair, a form of tegumentary appendage peculiarly characteristic of this class. In the Cetacea, however, there is almost entire absence of hair; one of its uses—that of keeping the heat within the body—being here provided for by the thickening of the skin and the deposition of the blubber beneath it. In the Edentata, the hairy covering is almost entirely replaced by horny scales, as in the scaly ant-eater, or by bony plates, as in the armadillo. In the quills of the porcupine and the spiny bristles of the hedgehog are other modifications of hair which depart less from its ordinary character than those above mentioned. Moreover, the claws, nails, and hoofs of all mammals, the horn or horns on the nose of the rhinoceros, and the horns of the hollow-horned ruminants (such as the ox, sheep, etc.), are all composed of more or less similar epidermic structures.

The *skeleton* usually governs the general form of the body. In its general conformation, it shows close analogy with that of man (see SKELETON); the differences which are remarked among various animals of this class mainly depending (1) on the absence of posterior limbs in the marine mammals, such as the dugong, porpoise, and whale; (2) on the diminished number of digits (see HAND and FOOT), and on the absence of the clavicle in the greater number of those species whose anterior limbs serve only for motion; (3) on variations in the number of vertebræ; (4) on inequalities in the relative sizes of the same bones; (5) on variations in the structure of the skull.

Although the same bones enter into the formation of every mammalian skull, great differences present themselves in different skulls, according as the face is more or less prolonged, or, on the other hand, the brain-case or cranium is more or less developed. In proportion as a mammal is removed in classification from man, we find that the cranium is diminished; that the face is prolonged by extension of the jaws and nasal cavities; that the orbits are directed outward and are less distinct from the temporal fossæ; and that the occipital foramen (through which the spinal cord passes) and the condyles (by which the head articulates with the first vertebra of the spinal column) are placed toward the posterior part of the skull, instead of occupying the middle of its inferior surface, as in man. Among the most characteristic points in the mammalian skull generally are: (1), that the lower jaw articulates directly with the skull, without the intervention of a suspensorium, the upper portion of the mandibular and hyoid arches being taken into the internal ear, and forming the malleus and incus; (2) that the skull articulates to the vertebral column by two condyles, the basi-occipital being also ossified.

The *vertebral column*, except in relation to its length, closely resembles that in man, where there are 7 cervi-

cal, 12 dorsal, 5 lumbar, 5 sacral, and 5 caudal vertebræ. The *cervical vertebræ* are almost universally 7 in number, however long or short the neck may be, the only known exceptions being two *Sirenians* (*Manatus* and *Rhytina*), which have 6, and the three-toed sloth, which has 9. The number of *dorsal vertebræ* ranges from 11 to 23, which latter number occurs in the two-toed sloth. The *lumbar vertebræ* range from 2 to 9, the most common number being 5. The *sacral vertebræ*, which coalesce to form the sacrum and to support the pelvic arch, vary from 2 (in the Monotremata and Marsupialia) to 6 (in the mole), the most common number being 4. In the Cetacea, the rudimentary pelvis is loosely connected with a single vertebra, and there cannot be said to be a sacrum. The *caudal vertebræ*, which in man and the higher apes coalesce to form the *coccyx*, are usually very numerous, 20 or 30 being a common number, and 40 occurring in the long-tailed ant-eater. The form and number of *caudal vertebræ* vary in accordance with the purposes to which the tail is applied; and the special uses of this organ are numerous. For example, in the kangaroo it serves as a third leg when the animal stands erect; in the American monkeys and in some of the opossums it is a prehensile organ; and in the Cetacea and in the beaver it is a powerful instrument of propulsion in water. The *ribs* correspond in number to the dorsal vertebræ, and, as a general rule (excepting in the Monotremata), they are connected superiorly not only with the bodies of two vertebræ, but with the transverse process of one of them, and hence present corresponding articular surfaces. The *sternum* is generally divided into three portions; the middle one, in place of being represented by a single piece, as in man, usually consisting of as many pieces as there are true ribs. It is very short in the Cetacea, and is very long in the Carnivora and Edentata, extending in some cases nearly to the pelvis. In certain cases, in which it is necessary that the anterior members should be endowed with unusual strength, as in the bats, moles, and armadillos, there is a projecting keel upon this bone (as in birds) for the attachment of powerful pectoral muscles.

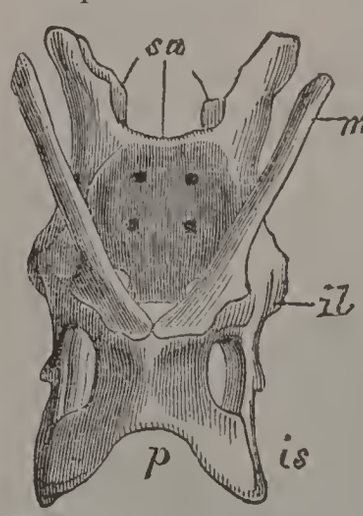


Fig. 2.—Pelvis of Echidna: *sa*, sacrum; *il*, ilium; *is*, ischium; *p*, pubis; *m*, marsupial bone.

The cavity of the *thorax*, bounded superiorly by the dorsal vertebræ, laterally by the ribs, and inferiorly by the sternum, is completely separated from the abdominal cavity in mammals (but in no other vertebrates) by the muscular septum known as the *diaphragm* or midriff.

The *scapular arch* in mammals is comparatively imperfect, its coracoid element (see CORACOID BONES) not being suf-

iciently developed, except in the Monotremata, to reach the sternum, or to meet its fellow in the mesian line. Where the scapula has any bony connection with the sternum, it is through the clavicle or collar-bone, which is frequently absent. The *pelvic arch* is always composed of the ilium, ischium, and pubis on either side, and these bones generally coalesce, as in man, at an early period of life; but in the Monotremata they remain separate. In the Monotremata and Marsupialia, the pelvis presents two additional bones, termed the marsupial bones, projecting for ward and outward, which are, however, simply ossifications of the tendons of the external oblique muscles of the abdomen (see fig.2), and are thus of no special morphological importance. They may aid in supporting the marsupium or pouch, when that is present. In the bat, the pelvis is greatly elongated, and the bones do not unite in the median line to

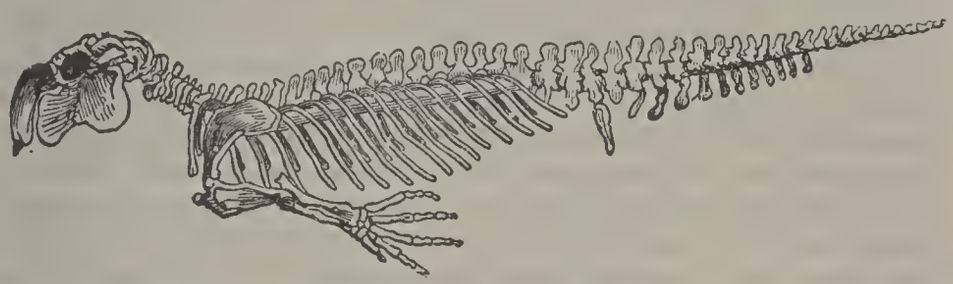


Fig. 3.—Skeleton of Dugong:
In which the pelvis is a mere bony ring.

form a symphysis, so that the lower part remains open, as in birds; while in the Cetacea, which have no posterior limbs to be supported by the pelvis, that organ is extremely rudimentary (see fig. 3), or even entirely absent. As a general rule, the pelvis of mammals is never so broad as in the human subject, and its lateral walls are always relatively smaller, flatter, and longer.

The *anterior extremities* are always present, though their modes of conformation are very varied, according to the purposes for which they are designed; and the *posterior extremities*, also always present, except in the Cetacea, closely resemble the anterior; the difference being greater in man than in any other case, in conse-

Fig. 4.—Lower Jaw of a Young Pig (from Owen's *Mammalia*):
i indicates an incisor; *c*, a canine; *p*, a premolar; and *m*, a molar tooth. When the letter *d* is prefixed, the tooth is a deciduous or milk tooth.

quence of the special adaptation of the pelvic extremities for the support of his body in an erect position. For the ordinary modifications of these organs, see arti-

cles HAND: FOOT.—See Owen, *On the Nature of Limbs.*

The *teeth* of mammals constitute so characteristic a feature in their organization, and are of so much service in their classification, as to require special notice. The only animals of this class in which teeth are altogether absent are the true ant-eaters and the Monotremata. The number of teeth is generally much more restricted than in reptiles or fishes. In most mammals it is the same as in man—viz., 32; but the typical number, according to Owen, is 44. The largest number of teeth occurs in the armadillos (in one species of which are 98 simple molars), and in the dolphins, which have 100 to 190 teeth. When the teeth are in these excessive numbers, they are small, nearly equal, and usually of simple conical form, but excepting in these cases, most mammals have particular teeth for special purposes; thus, the front teeth (fig. 4, *i*), from being commonly adapted to effect the first coarse division of the food, are called cutters, or *incisors*, and the back teeth (*m*), which complete its comminution, grinders, or *molars;* while the large conical pointed teeth (of which there is never more than one in each half jaw), which are specially adapted for holding the food while the animal tears it asunder, are called holders, laniaries, or more commonly *canines* (*c*), from being well developed in the dog. The incisors and canines may be absent, but except in the cases previously mentioned, the molars are always present. The mode in which the teeth are implanted in the jaw is characteristic of the class. Excepting in those teeth which grow from persistent pulps (as the front teeth of the Rodents, for example), the dental cavity is closed in at its extremity, and the tooth is prolonged into a fang, which is implanted in a socket lined by periosteum, to which the exterior of the fang is firmly adherent; there being never a continuous ossification or anchylosis of the tooth to the jaw. Again, the fang of the molars is usually divided into two, three, or even four divergent processes, and there is no known fish or reptile in which even a bifid fang occurs. Teeth are confined in this class to the maxillary, pre-maxillary, and lower maxillary bones, and form only a single row in each; and, in general, teeth are situated in all these bones. In all existing mammals, except man, there is a vacant space between the incisor and canine teeth. No mammal has more than two successive sets of teeth; most, however, have two; the first, called temporary, deciduous, or milk teeth, being displaced, and succeeded by the permanent teeth, as shown in fig. 4.—See TEETH: also Prof. Owen's magnificent *Odontography.* The *digestive apparatus* (of which the teeth may be considered a portion) acquires its greatest completeness and elaboration in this group. For the leading differences which it presents, and which depend mainly on the nature of the food, see DIGESTION.

The heart is four-chambered, and the red blood-corpuscles are not nucleated. The single aortic arch lies

on the left side. The diaphragm is complete. See CIRCULATION: RESPIRATION.

The *kidneys* of mammals generally agree with those of man in internal structure: see KIDNEYS. In some animals (especially those that live in water) they are much lobulated. In the ox, there are 20 free rounded lobules; in the bear, 40 or 50; in the seal, 70 or 100; while in the true Cetacea, the separate lobules are so numerous as to give a racemiform appearance to the kidney. All mammals are provided with a urinary *bladder*, in which the excretion may accumulate so as to require being discharged only at intervals. This organ is largest in the Herbivora, and very small in the Cetacea.

The *nervous system* is remarkable for the large size of the brain, and especially of its hemispheres, in comparison with the rest of the nervous system. The surface of the cerebral hemispheres exhibits a more or less convoluted appearance, the number of the convolutions being to a great degree in correspondence with the amount of intelligence of the animal. The hemispheres are united at their lower parts (except in implacental mammals) by a fibrous band or commissure, termed the *corpus callosum*, which does not occur in the other vertebrates. In the lowest mammals, the cerebellum is situated quite behind the hemispheres, so as to be visible from above; in animals higher in the scale, it is more or less covered, in consequence of the prolongation of the hemispheres backward; until in the highest apes and in man it is almost completely concealed.

The *organs of the senses* are constructed on precisely the same plan as in man. For the most important variations, see EAR: EYE: ETC.

The *muscular system* generally accords with that of man, but with many remarkable deviations, according to the form of the skeleton, the use of the several organs in the act of locomotion, the natural posture of the animal, etc.

The reproductive organs open into a cloaca in the embryo, and permanently in Ornithodelphia; in marsupials their openings are included by the anal sphincter, and in the higher M. they are completely distinct.

The class is usually divided as follows:

I. ORNITHODELPHIA, including those mammals which resemble birds and reptiles in the possession of a cloaca and of large coracoid bones, articulating with the sternum. There is no vagina, and the mammary glands are destitute of teats. This group contains only one order, Monotremata (q.v.). and two genera, *Ornithorhynchus* (q.v.) and *Echidna* (q.v.).

II. DIDELPHIA.—In this and the subsequent group, the coracoids are mere processes of the scapula, there is a vagina, and the mammary glands have teats. The special characters of Didelphia are, that the embryo does not become connected with the wall of the uterus by a placenta, and that the vagina is double. There is only one order, MARSUPIALIA, but its members are differentiated into very distinct families (kangaroos, opossums, wombats, etc.), and adapted to very various habits of life.

III. MONODELPHIA.—In this sub-class, the embryo is nourished while within the uterus by a placenta; and the vagina is single. The existing orders are:

1. EDENTATA (ant-eaters, sloths, armadillos, etc.).
2. HYRACOIDEA (cony, *Hyrax*).
3. PROBOSCIDEA (elephant).
4. UNGULATA.—A large order divided into two well-marked groups, *Perissodactyla* and *Artiodactyla;* the former including three existing genera (horse, tapir, and rhinoceros), and the latter pigs and ruminants.
5. SIRENIA.—An order which includes the Manatee (q.v.), Dugong, and Rhytina; formerly included under Cetacea, but now considered a modification of the Ungulate type in accordance with an aquatic mode of life.
6. CARNIVORA.—A large order divided into two groups—(*a*) *Fissipedia*, including the dog, bear, and cat families; and (*b*) *Pinnipedia*, sea-lions, walruses, and seals.
7. CETACEA (whales, porpoises, etc.).—An order which presents an extreme modification of the Pinnipede type to aquatic habits, and stands in the same relation to *Carnivora* as *Sirenia* to *Ungulata*.
8. INSECTIVORA (hedgehogs, shrews, moles).—In many respects the lowest and simplest order of Placental mammals, with the exception of the Edentata.
9. RODENTIA (hares, rats, porcupines, squirrels, etc.).
10. CHEIROPTERA (bats).—Essentially a modification of the Insectivorous type for purposes of flight.
11. PRIMATES: including lemurs, monkeys, apes, and man.

Distribution in Time.—The study of the extinct M. has yielded more important results than any other branch of paleontology—a department of zoölogical inquiry which was indeed initiated by the investigations of Cuvier on the mammalian remains of the Paris basin, and which has continued, in the hands of Owen, Gaudry, Marsh, and many others, to throw remarkable light on the most important problems of zoölogy and geology alike.

The earliest remains known date from the Trias, and others occur sparingly in subsequent periods of the Secondary epoch, but all are of marsupial type. No ornithodelphous mammals have yet occurred in the fossil state, and the affinities of mammals to the lower vertebrate classes remain as obscure as ever. In the Tertiary strata, however, placental mammals occur in great abundance, and the more important ordinal types, Carnivores, Ungulates, etc., are already distinctly differentiated. Within the limits of these orders, however, is found a vast number of ancient forms so perfectly gradated below the definite groups which alone remain at the present day as to indicate a necessity for the conception of regular series where formerly the conception of isolated types was thought adequate.

Taking, e.g., the horse, a Perissodactyle Ungulate so remarkably specialized as to have been considered by Cuvier the type of a distinct order, *Solidungula*, we are now in possession of a complete series of forms connecting it with the lowest and simplest five-toed ungulates. The horse walks upon the terminal joint of the third or middle digit of each limb (the hoof corresponding to the nail), and the only trace of the missing digits is afforded by the skeleton, which shows the rudimentary second and fourth metacarpals and metatarsals as slender bony splints applied to each side of the well-developed corresponding bone of the middle digit. The fibula is rudimentary, and the molar teeth have long crowns, and bear a very complicated and characteristic double-

crescentic pattern. The horse of the later Pliocene period (*Pliohippus*) differed a little from the present genus, chiefly in possessing much better-developed but still rudimentary second and fourth metacarpals, and shorter and less complicated teeth. In the earlier Pliocene strata, however, we find a horse (*Hipparion*) which possessed not only complete, though still slender, second and fourth metacarpals, but even the phalanges of the corresponding digits, which must have dangled beside the large central hoof, without resting on the ground, like the analogous 'dew-claws' of the existing deer and cattle. Its teeth, too, are considerably shorter. Passing downward into the Miocene strata, we find a new genus, *Anchitherium*, in which the second and fourth digits are considerably larger, and a minute rudiment of the fifth metacarpal makes its appearance. The rudimentary fibula, too, is better developed, and the molars have crowns scarcely larger than those of ordinary mammals, and show the equine pattern in a more simple form. Earlier still, we have *Mesohippus*, which differs from its last-named successor chiefly in the better development of its rudimentary fifth metacarpal; while in the Eocene we find *Orohippus*, in which the fifth metacarpal bears a perfect digit, the fibula, too, becoming complete, and the teeth, now 44 instead of 40 in number, yet more simple. Finally, in the Lower Eocene, the equine type is represented in its simplest state by *Eohippus*, in which the missing first digit of the fore-limb appears as a rudimentary metacarpal. Eohippus in turn is closely related to the families of tapirs and Palæotheria, and these in turn to the yet simpler *Coryphodon*, which possessed five complete toes on each foot. Thus not only does the paleontologist possess a series of gentle gradations, from the equine to the primitive ungulate type (for of the six extinct equine genera above named, Marsh has described at least 40 species), but these are arranged in precise stratigraphical order, greater and greater specialization keeping pace with later and later time. Thus the horse, with so complete a pedigree, has become the *cheval de bataille* of the evolutionist, as far at least as relates to the appearance of animal forms in series.

So, too, keeping within the limits of the perissodactyle ungulates, we find the tapirs and rhinoceros families leading back to a common form, the Lower Eocene *Hilaletes;* while, starting from the simple *Coryphodonts*, we find strange new families arise, long completely extinct, such as the huge six-horned *Dinocerata* of the Lower Eocene. Passing to the sub-order *Artiodactyla*, we find the allied families of pigs and hippopotami converging in the Eocene; the ruminants, too, lead back to lower and simple forms, some of which closely approach the porcine type. Taking a simple family, that of the deer (*Cervidæ*), we find its Lower Miocene representative entirely hornless; that of the Middle Miocene (*Procervulus*) provided with simple non-deciduous horns, while a slightly higher form shows a lateral tine, and a 'bur,' showing

that the horn was deciduous; but curiously enough, the bur is placed some way up the horn instead of close to the skull, as in the present forms, showing that a much smaller portion of the horn was shed. The Pliocene deer possess two lateral tines, and it is instructive to notice that, so far as horns are concerned, the three successive types of deer are in the position of the existing deer of the first, second, and third year, respectively; while the more complex antlers, with which we are familiar, do not appear until Post-Tertiary times. A similar progressive increase is observable in the brain of all orders of mammals, from the small, low, almost reptilian Eocene type, to the massive and well-convoluted brains of the present fauna. See MAN.

AUTHORITIES.—ANATOMY—Huxley, *Anatomy of Vertebrated Animals* (Lond. 1871); Nicholson, *Paleontology* (Edin. 1880); Wallace, *Distribution of Animals* (Lond. 1878).

MAMMALIFEROUS, a. *măm'măl-ĭf'ėr-ŭs* [Eng. *mammalia,* and L. *fero,* I bear or carry]: containing fossil remains of mammals.

MAMMALOGY, n. *măm-măl'ō-jĭ* [Eng. *mammal,* and Gr. *logos,* discourse]: the branch of natural history which relates to mammals. MAMMAL'OGIST, n. *-ō-jĭst,* one skilled in the knowledge of mammals and their classification.

MAMMALS, AGE OF. See PALEONTOLOGY.

MAM'MARY GLAND: organ for secretion of milk in the breasts of mammalia. For the *Anatomy,* see BREAST.

Diseases of the Mammary Gland.—The following are some of the most important:

Acute inflammation of the breast; characterized by great swelling, tenderness, pain, and fever. There is a knotty feeling in the inflamed part, and matter soon forms; but the abscess is often slow in pointing. The affection may occur at any period of lactation. The bowels should at once be cleared out by sharp purgatives; leeches and fomentations should be applied; the arm on the affected side should rest in a sling; and an opening should be made at the spot where matter can be felt, the cut being in a line radiating from the nipple so as not to cut across any of the lacteal ducts. The milk should also be regularly drawn off, if it can be done without extreme pain.

Sore nipples. Among remedies for excoriations, cracks, fissures, and ulcerations of the nipple, which cause great pain in suckling, are the application of strong astringent lotions (e. g., tannin lotion), touching the sore point with solid nitrate of silver (lunar caustic), and especially the application of collodion. In bad cases, a metallic shield must be placed on the nipple, to protect it from the clothes and from the child's mouth. The regular application of a liniment of rectified spirits and olive oil in equal parts will sometimes prevent this affection.

The mammary gland is liable also to *hydatid disease* (see HYDATID), and to *Cancer* (q. v.), as well as benign tumors.

MAMMEE, n. *măm-mē'*, or MAMMEE APPLE [a native name], (*Mammea americana*): a highly esteemed fruit of the W. Indies (where it is sometimes called the *Wild Apricot*) and tropical America. It is produced by a beautiful tree of nat. ord. *Guttiferæ*, 60-70 ft. high. The fruit is roundish, from the size of a hen's egg to that of a small melon, with a thick leathery rind, and a very delicate inner rind adhering closely to the pulp, which must be carefully removed on account of its bitter taste. The pulp is firm and bright yellow, with peculiar sweet and very agreeable taste, and pleasant aromatic odor.—A similar fruit is produced by *Mammea africana*, an African species.

MAMMER, v. *măm'mėr* [an imitative word]: in *OE.*, to stand in suspense; to hesitate; to mumble. MAM'MERING, imp. MAMMERED, pp. *măm'mėrd.*

MAMMET, n. *măm'mĕt* [Swiss, *mammi*, a baby]: in *OE.*, a doll; a puppet. *Note.*—MAMMET is not identical with *mawmet*, though constantly confounded with it.

MAMMIFER, n. *măm'mĭ-fėr* [L. *mamma*, the breast; *fero*, I bear]: one of the mammals. MAMMIF'EROUS, a. *-mĭf'ėr-ŭs*, having breasts or MAM'MÆ, *-mē.*

MAMMIFORM, a. *măm'mĭ-fawrm* [L. *mamma*, the breast; *forma*, shape]: formed as breasts.

MAMMILLARY, a. *măm'mĭl-lėr-ĭ* [L. *mammilla* or *mamilla*, a little breast or teat—from *mamma*, the breast]: pertaining to or resembling the breast or nipples. MAM'MILLATED, a. *-lā-tĕd*, having small nipples; rounded like a teat; studded with rounded or pap-like projections.

MAMMOCK, n. *măm'mŏk* [an imitative word: Sp. *mamar*, to suck, to devour]: in *OE.*, a piece; a scrap: V. to tear in pieces; to munch and tear as with the teeth. MAM'MOCKING, imp. MAM'MOCKED, pp. *-mŏkt.*

MAMMON, n. *măm'mŏn* [Syr. *mamō'na;* Chald. *mamon*, riches—and in the same sense in Syriac; Heb. *matmon*, a hidden treasure]: riches; wealth, usually in an ill sense (Matt. vi. 24; Lk. xvi. 9, 11, 13). By this word Christ does not refer to an actual idol worshipped under that name, but personifies a hidden idol of the heart. MAM'MONIST, n. *-mŏn-ĭst*, or MAM'MONITE, n. *-mŏn-īt*, a person who devotes himself to the attainment of riches; a worldly-minded, selfish person.

MAMMOTH, n. *măm'mŏth* [Russ. *mamant;* Siberian, *mammont*, a mammoth—from Tartar *mamma*, the earth: comp. Ar. *behemoth*, a very large elephant]: the great fossil elephant of Siberia (*Elephas primigenius*), species of very large hairy elephant, now extinct. See ELEPHANT —*Fossil Elephants.* The name Mammoth is sometimes

given erroneously to the Mastodon (q. v.): ADJ. very large. MAMMOTH'IAN, a. *-ĭ-ăn*, pertaining to a mammoth.

MAMMOTH, an elephant (*Elephas primigenius*) which inhabited the temperate parts of the northern world during the Glacial period, and at its close spread northward with the retreat of the ice, and survived until the Neolithic period. Mammoth remains have been found in intimate association with the handiwork of savage man; and upon a piece of bone a portrait of this animal was found scratched, the accuracy of which shows a close acquaintance by the Cave-dwellers of France with the animal. This elephant, although the word mammoth has become an expression for hugeness, was little if any larger, on the average, than the modern Asiatic elephant, to which it was nearly related. Its remains are abundant and enable us to reconstruct its form and features completely, especially since the remarkable discovery, first in 1799, of carcasses frozen into the icy cliffs along the Arctic coast of Siberia. An important discovery of this kind occurred in 1901. Since early times ivory from buried tusks of these animals has been obtained from northern Siberia and Alaska, and many curious stories were invented to account for its origin, especially among the Chinese, who had never seen an elephant; but the specimens above mentioned contained not only the tusks still in their sockets, and every bone in its place throughout the skeleton, but a great part of the flesh was in a condition fit for sledge-dogs to eat and enjoy, and was covered with thick skin still clothed with long dark hair, beneath which was a dense woolly fur, well fitted to protect the animal against arctic cold. The ears were much smaller than those of modern elephants. This specimen of 1901, which is preserved in the Royal Museum at St. Petersburg in the attitude in which it was found buried, measured 16 feet 4 inches from the forehead to the extremity of the tail; its height was 9 feet 4 inches; and the tusks, along the outer or greater curve, measured 9 feet 6 inches. Of other well-known specimens, that skeleton mounted in Chicago is one of the largest known, and its tusks measure 9 feet 8 inches. The largest tusks on record are a pair found in Alaska, which measure 12¾ feet in length. All mammoth tusks show an outward and upward sweep very distinct from the growth of elephant tusks. The mammoth seems to have been extremely numerous all over northern Europe, Asia and North America, especially during post-glacial times, when northern Asia was covered with pine forests to the borders of the Arctic Sea, affording plentiful food in their leaves and twigs. The disappearance of these forests is supposed to be the principal influence which led to the extermination of the species. Consult: Beddard, *Mammalia* (1902); Lucas, *Animals of the Past* (1901). Compare MASTODON; see also ELEPHANT.

MAMMOTH CAVE.

MAM'MOTH CAVE: in Edmondson co., Ky., near Green r., about 75 m. s.s.w. of Louisville, and 130 m. in the same direction from Lexington. It was discovered 1809, and is the largest known cavern in the world, consisting of a series of cave chambers that has been explored to a distance of 10 m.: the total length of all the chambers and passages is not less than 150 m. It is owned by private individuals, and is but one of a number of similar though smaller caverns extending under entire districts of Kentucky and Tennessee. Mammoth Cave was part of the course of a subterranean river in some past geologic age, which absorbed from the soil much carbonic acid gas; this chemically took up quantities of carbonate of lime, and so formed large cavities, on the floor and ceiling of which the carbonate was again deposited, in part, in the forms of stalagmites and stalactites. Thus such caves are successively formed and gradually closed up again. At present Mammoth Cave is very gradually decreasing thus, through the deposits of carbonate constantly taking place within its chambers, giving them their varied, beautiful, fantastic, and often grotesque appearance. The entrance to the cave is in the shape of an irregular funnel, 50 to 100 ft. in diameter at the top, with very steep walls. Its interior consists of innumerable wonderful galleries, avenues, chambers, domes, grottoes, and chasms, beside numerous rivers, lakes, and cataracts—the walls, floors, and ceilings of limestone rock in all varieties of shapes, such as chairs, pulpits, organs, rendered more fantastic by the massive stalagmitic and stalactitic formations everywhere present. Among the most interesting chambers are the temple, or chief city, with an area of 4 or 5 acres, and ceiled by a dome of solid rock 120 ft. high. Still higher is Lucy's dome, about 300 ft. high, though only about 60 ft. in diameter. Others are the Mammoth dome and Stella's dome, each not less than 250 ft. in height, and Gorin's dome, about 200 ft. high. The famous Star Chamber is about 500 ft. long by 70 ft. wide, with a ceiling 70 ft. high composed of black gypsum studded with a multitude of white points which, when it is lighted up, have all the effect of stars. Other features are Silliman's avenue, 1½ m. long, from 20 to 200 ft. wide, and 20 to 40 ft. high; Marion's avenue, about the same size; and Proctor's Arcade, a tunnel ¾ of a mile long, 100 ft. wide, and ceiled at the height of 45 ft. by a smooth rock. Cleveland's Cabinet is 2 m. long, spanned at the height of about 10 ft. by an arch of fully 50 ft. It is regarded as one of the most beautiful formations in the entire cave, being incrusted by a variety of formations in different colors and all manner of shapes, some delicate as fairy work, some grand and massive as ancient Egyptian sculptures or architecture. The base of it is sulphate of lime, sometimes smooth and of brilliant whiteness, at other places crystallized and glittering like diamonds. The whole is bewildering with its beauty and

variety. Of the abysses may be mentioned the Maelstrom and Bottomless Pit, each about 175 ft. deep and 20 ft. wide. Of the considerable bodies of water in the cave, the largest is Echo river, about ¾ of a mile long and in places 200 ft. wide, with a depth of 10 to 30 ft. It flows under an arched ceiling 15 ft. high, and connects somewhere with Green r. The river Styx is 450 ft. long, and is spanned by a natural bridge about 30 ft. above it. Lake Lethe, 450 ft. long, varies in depth according to the depth of Green r.; the Dead Sea is somewhat smaller. A number of different kinds of animals and reptiles are found in the cave, such as lizards, frogs, crickets, rats, bats, and various fish washed in from Green r. The most interesting, however, and certainly native in the cave, are the 'blind fish' (*amblyopsis spelæus*), a species of fish without any eyes, and the eyeless cray-fish, besides another fish with rudimentary but entirely sightless eyes. These all are of a bleached, white color, and are held to afford evidence of the theory of natural selection. The atmosphere of the cave is pure and healthful, and of a nearly uniform temperature of 59° throughout the year. For this reason and because of its nitrous quality it was supposed to be specially beneficial to consumptives and asthmatic sufferers, and hence a hotel was built for the accommodation of such in one of the large chambers of the caves: this, however, was abandoned some years ago. The Mammoth Cave is believed to have been discovered about 1809, but many years passed before it was wholly explored. It was originally the property of the Yatewood family, by whom it was sold to Messrs. Gratz and Wilkins of Lexington some time prior to 1812. During the war with England (1812-15) these parties used the cave for the manufacture of saltpetre, but after the war this industry was abandoned because of the cheapness of the article imported from E. India. The saltpetre works were within ½ m. of the entrance. The Lexington owners sold the cave to Franklin Gorin, who first opened it to the public as a place of popular resort, and he in turn sold it to Dr. John Croghan of Louisville, who devised it to his nephews and nieces according to the English law of entail, and under his will the property was placed in the care of trustees. As a sanitarium the cave was a failure; consumptives experienced relief while living in the hotel or the numerous boarding-houses created in it, but all benefits disappeared when they returned to the world above. The cave receives a steady flow of sight-seers, but has never had the rush of a popular resort, though a wedding beneath its domes a few years ago temporarily increased interest in it. Several other large caves are not far from Mammoth Cave: of these are Proctor's cave, about 3 m. long; and White's cave, Diamond cave, and Indian cave, each about 1 m. long.

MAMUN' (or MAMOUN'). A'BU'L-ABBAS'-ABDAL'LA AL. See AL-MAMUN; also ABBASSIDES, of Bagdad.

MAN, n. *măn*, MEN, n. plu. *mĕn* [AS. and Goth. *man*, man: Skr. *man*, to think; *manu*, a thinker, man]: a human being; the human race; mankind: see MAN (below); the male sex, as distinguished from *woman;* adult, as opposed to *boy;* a male servant or attendant; in a general sense, any one; an individual brave, strong, and good, as 'be a man': V. to furnish or guard with men; to fortify or strengthen; in *OE.*, to tame a hawk; to attend on as a servant; to point or aim. MAN'NING, imp. MANNED, pp. *măn̆d:* ADJ. furnished with men; guarded with men (see below, MANNING THE NAVY: MANNING THE YARDS). MAN'FUL, a. *-fûl*, courageous; brave; becoming a man. MAN'FULLY, ad. *-lĭ*. MAN'FULNESS, n. *-nĕs*, the quality of being manful; courageousness. MAN'LIKE, a. *-līk*, having the form and appearance of a man; possessing the nature of a man. MAN'LY, a. *-lĭ*, becoming a man; brave; dignified; noble; not boyish or womanish. MAN'LINESS, n. *-lĭ-nĕs*, the qualities of a man; bravery. MAN'HOOD, n. *-hûd* [*man*, and postfix *hood:* AS. *manhad*]: state of one who is advanced beyond boyhood; human nature; the qualities of a man; courage. MAN'NISH, a. *-nĭsh*, having the appearance of a man; masculine. MAN-HATER, one who hates mankind; a misanthrope. MANKIND', n. *-kīnd'* [*man*, and *kind*]: the race of human beings; the males of the human race. MAN-MIDWIFE, a medical man who attends women in childbirth. MAN-PLEASER, a flatterer of man. MAN-SERVANT, a male attendant or servant. MAN-STEALER, one who steals and sells men as slaves. TO MAKE A MAN OF, to place in circumstances favorable for advancement in life. MAN-OF-STRAW, a mere puppet or nominee; in *commercial language*, one without sufficient means or substance to undertake moneyed obligations; one put forward to affect a responsibility which he cannot sustain; a poor man. MAN-OF-WAR, armed vessel belonging to a state (see below). MAN OF WAX, a model-man as if formed in wax. MEN-AT-ARMS, a term formerly applied to the better class of soldiers who were fully and heavily armed.—SYN. of 'manly': stout; manlike; firm; undaunted; undismayed; bold; daring; courageous; hardy; stately.

MAN: the human race; mankind; also a human being as typical of the race. For the intellectual and moral nature of man, see the titles pertaining to psychology and ethics—e.g., ANTHROPOLOGY: SOUL: EMOTION: WILL: INTELLECT. MIND: INSTINCT: CIVILIZATION: RELIGION: CHRISTIANITY: GOD. For various races, see ETHNOLOGY. For the constitution of his bodily frame, see BRAIN. NERVOUS SYSTEM: SKULL: SKELETON: MUSCLE: ETC. For physiology see such titles as DIGESTION: NUTRITION: CIRCULATION. For the size and weight of the human infant, see FŒTUS. For proportion of males to females, mean expectation of life, and other particulars, see VITAL STATISTICS.—See also PHILOLOGY: SPECIES: DESCENT OF MAN: MUSCULAR FORCE.

In comparing the human figure with that of the anthro-

poid apes, the animals whose form approximates most closely to that of man, the following are chief points of distinction: The human figure is erect; the feet nonprehensile. The skull is markedly different, being proportionally smaller. The orbits and jaws are relatively smaller in man; the face is more vertically directed; the nasal bones project more beyond the maxilla than in the apes. The most striking distinctions are, however, the very much greater volume of the human brain as compared with the highest apes, the vastly greater complexity of its convolutions, and the greater size of the cerebrum as compared with the cerebellum. Nevertheless, the most recent classification of mammals (see MAMMALIA) no longer constitutes man an order by himself, but ranks him as a genus (with only one species) of the group of higher animals, the primates, to which belong also the lemurs, monkeys, and apes. However, it is unscientific not to recognize the existence of a range of characteristics by which man is most profoundly and widely distinguished from all other animals—his possession of spiritual faculties and of a responsible moral nature. The fact that Science—i.e., *physical* science—finds these higher faculties too mysterious in their origin to yield themselves to its research, neither constitutes any reproach against that branch of knowledge, nor in the least invalidates the distinguishing characteristics above referred to as pertaining to man. No discoveries of scientific truths regarding man's animal body, its origin, its development, its history, can even touch the question as to his possession of elements beside those that are merely animal. That question must necessarily be referred to the realm of moral and spiritual science, and is inevitably answered by man's consciousness.

Antiquity of Man.—It must be remembered that the current chronology, based on Hebrew traditional interpretation of the Scriptures, is altogether conjectural. The Bible attempts to supply no extended chronology. It is conceded by all Christian scholars that man's history on the earth began probably more than 6,000 years ago; but very few now fix a definite period. From 8,000 to 10,000 years is perhaps a not infrequent conjecture, but it is understood to be mere conjecture, held open to indefinite variation according as facts bearing on the question may come to light. See CHRONOLOGY.

It is evident that the question of man's antiquity on the earth belongs largely in the realm of physical science. Many scientific men—notably Boucher de Perthes, Falconer, Prestwich, and Sir Charles Lyell—have claimed to adduce facts showing a vastly extended period. The archeologist, Boucher de Perthes, found at Abbeville, France, 1836, in undisturbed strata 20–30 ft. under the surface, a large deposit, where the bones of mammoths and rhinoceroses were associated with rudely chipped flint axes, quite different from the smoothly polished stone tools which had long been known. Thus

he was convinced of the contemporaneity of a race of men, ruder than any which had been dreamed of before, with these extinct mammals. In 1863 Lyell ably summarized the existing evidence in his *Antiquity of Man*. —Archeologists have been, and to some extent still are, accustomed to classify antiquities by the aid of the materials of which the contemporaneous implements and ornaments are composed, and thus refer any object to the age of iron, a previous age of bronze, or a yet more remote age of stone. The age of iron is still with us, that of bronze seems to have been comparatively brief, and the geologist has therefore mainly to deal with the relics of the stone age, and the vast changes of the climate and surface of Europe and America in it. Stone implements are found of two classes; one class, deemed the older, showing little variety of form, never ground and polished, but rudely chipped into shape (see FLINT IMPLEMENTS): while those of the later period are varied in form, and generally either ground to a sharp edge or polished all over. Hence the names *Paleolithic* and *Neolithic* are usually applied to the so-called old and new stone ages respectively. But, see BRONZE, AGE OF: CRANNOGS. The excavations which have been made in hundreds of caverns in Britain and on the European continent have yielded results which many scientists have accepted as evidence of the contemporaneity of man with sundry extinct fauna belonging to the early inter-glacial times—even pre-glacial, some have claimed: see KENT'S CAVERN. And a rough approximation to the date of the glacial period, by calculations based on the Precession of the Equinoxes (q.v.), is believed to indicate its close about 100,000 years ago. Also, it is attempted to date approximately certain deposits by calculations based on observed rates of denudation: see DENUDATION: also GEOLOGY.

Meanwhile another school of scientific observers declare the data insufficient for such extreme conclusions, they even question or deny the certainty of some of the principles which are assumed in such use of the data. At present the question as to man's antiquity on the planet seems to be matter of conjecture rather than of knowledge; though with almost universal agreement that the brief chronology long popular is a mistake; also with a rapidly growing conviction that the immense periods commonly assigned to man's antiquity by scientific theorizers of a few years ago are equally mistakes.

Lyell, *Antiquity of Man;* Croll, *Climate and Time;* De Quatrefages, *L'Espèce Humaine;* J. Geikie, *The Great Ice Age* and *Prehistoric Europe;* Principal Sir J. W. Dawson's *Modern Science in Bible Lands.*

MAN, ISLE OF: in the Irish Sea, n. lat. 54° 3′—54° 25′, and w. long. 4° 18′—4° 47′; abt. 30 m. w.n.w. from the nearest point of England, 33 m. e. from Ireland; the shortest distance between the island and the adjacent countries being from point of Ayre to Burrow Head in Scotland, 16 m. The length of the island is 33¼ m.,

breadth 12½ m.; about 145,325 acres, of which more than 90,000 are cultivated. Pop. (1891) 55,598; (1901) 54,758. At the s.w. extremity is an islet called the Calf of Man, containing 800 acres, a large portion of which is under cultivation. A chain of mountains extends from n.e. to s.w., the highest of which is Snaefell, 2,024 ft.: from its summit, the view is imposing: the picturesque glens and undulating country in the foreground; the rich plains of the n. and s. of the island in mid-distance; and beyond, the Irish Sea, bounded by the high lands of the surrounding countries, on which even the corn-fields may be descried. Several streams take their rise in these mountains. The coast-scenery from Maughold Head on the e., passing s. to Peel on the w., is bold and picturesque, especially in the neighborhood of the Calf, where the shore rises abruptly 1,450 ft. in height. Spanish Head, the s. extremity of the island, presents a sea-front of extreme grandeur.

The greater part of the island consists of clay-slate under various modifications. Through the clay-schist, granite has burst in two localities, in the vicinity of which mineral veins have been discovered, and are extensively worked. Nearly 4,000 tons of lead are extracted annually, as well as considerable copper, zinc, and iron; the lead ore is very rich in quality, as much as 108 oz. of silver having been occasionally extracted from the ton.

The island is divided into six *sheadings;* these into parishes, of which there are 17; these, again, into *treens;* and, lastly, into *quarterlands.* The towns are Castletown (q.v.), Douglas, the modern cap. (q.v.), Peel (q.v.), and Ramsey (q.v.).

Within the past few years great improvements have been made. At Douglas, a beautiful promenade has been erected; also a handsome landing-pier, at a cost of £48,000. Very extensive breakwater and other harbor works have been erected at Douglas. The total expense has been over £200,000. An outer pier and breakwater, constructed of concrete cement blocks, at a cost of about £150,000, was opened 1879. At Ramsey, a public promenade and inclosure on the foreshore have been carried out; and harbor works have been erected both here and at Port Erin, in the latter case at a cost of £77,500. Port Erin harbor is designed especially for the herring-fleet and for the steamers from Ireland, which are expected yet to form a great trade for the island, as a port of call between England and Ireland. Nearly £10,000 has been expended in casing the existing breakwater at Peel. To cover the extensive outlay on harbor works, the consent of the imperial treasury was asked and obtained 1866 for the readjustment of duties on articles imported into the island, such as spirits, wines, tobacco, teas, sugar, etc.

The I. of M. has much interest for the antiquary. Castle Rushen (see CASTLETOWN), probably the most perfect building of its date extant, was founded by

Guthred, son of King Orry, 947. The ruins of Rushen Abbey, dated from 1154, are picturesquely situated at Ballasalla. There are numerous so-called Druidical remains and Runic monuments throughout the island.

The language of the natives is a dialect of the Celtic, and is closely allied to the Gaelic and the Erse or Irish. As a spoken language, it is almost entirely disused.

The climate is remarkable for the limited range of temperature, both annual and diurnal; westerly and s. westerly winds greatly predominate, easterly and n. easterly winds occurring chiefly in the autumn. Myrtles, fuchsias, and other tender exotics flourish throughout the year.

The fisheries afford employment to nearly 4,000 men and boys. More than 700 boats of various tonnage are employed in the herring and cod fisheries, the average annual produce being above £60,000. In addition, a large number of English and Irish boats arrive at the island during the fishing season. Beside the herrings consumed fresh, there are about 40,000 barrels cured. The trade is chiefly coastwise; exports are limited to the products of the island.

Agriculture has of late years made considerable progress. Large numbers of fat cattle are shipped to the English markets, as well as about 20,000 quarters of wheat annually. The manufactures are inconsiderable; but to make up for this, about 130,000 visitors come to the island each season.

The revenue derived from the island amounts to about £50,000 per annum, of which the greater part is from customs duties, and the whole of which, except £10,000 a year payable to the imperial treasury, is used for insular purposes, such as public improvements, education, police, cost of government, etc.

The principal line of communication with the United Kingdom is between Douglas and Liverpool, by a fine fleet of swift steamers. There is a submarine telegraphic cable between Maughold Head and St. Bees Head. In 1873, July, a line of railway was opened between Douglas and Peel; 1874 to Castletown and the s.; 1879 to Ramsey —all on the narrow-gauge system.

Previous to the 6th c., the history of the I. of M. is involved in obscurity; from that period, it was ruled by a line of Welsh kings, until near the end of the 9th c., when the Norwegian, Harald Haarfager, invaded and took possession of the island. According to tradition, in the beginning of the 10th c., Orry, a Dane, effected a landing, and was favorably received by the inhabitants, who adopted him as their king: he is said to have been the founder of the present Manx constitution. A line of Scandinavian kings succeeded, until Magnus, king of Norway, ceded his right in the island and the Hebrides to Alexander III. of Scotland, 1266; this transference of claim being the direct result of the disastrous failure of the expedition of Hacon of Norway against the Scots, 1263. On the death of Alexander, the Manx placed

themselves under the protection of Edward I. of England by a formal instrument dated 1290; on the strength of this document, the kings of England granted the island to various royal favorites from time to time until 1406, when it was granted to Sir John Stanley in perpetuity, to be held of the crown of England, by rendering to the king, his heirs, and successors, a cast of falcons at their coronation. The Stanley family ruled the island under the title of Kings of Man, until James, 7th Earl of Derby, adopted the humbler title of Lord, on his accession to the government. In 1651 the island was surrendered to a parliamentary force by receiver-general Christian, who had raised an armed body against the government, which was then in the hands of the Countess of Derby. The parliament having thus obtained possession of the island, granted it to Thomas Lord Fairfax. On the Restoration, the Derby family were again put in possession. On the death of James, 10th Earl of Derby, without issue, 1735, James, 2d Duke of Athol, descended from Amelia Sophia, youngest daughter of James, 7th Earl of Derby, became Lord of Man. The Isle of Man having been for a long period the seat of an extensive smuggling-trade, to the detriment of the imperial revenue, the sovereignty of it was purchased by the British govt. 1765, for £70,000 and an annuity of £2,000 a year, the duke still retaining certain manorial rights, church patronage, etc. After negotiation and sales from time to time, the last remaining interest of the Athol family in the island was transferred to the British crown by John, 4th duke, 1829, Jan.; the amount paid for the island having amounted in the aggregate to £493,000.

The I. of M. forms a second bishopric under the title of Sodor and Man. The bishopric of the Sudoreys, or Southern Isles, was for a time annexed to Man, hence the title of Sodor, which is still retained, the name having been applied to the islet of Holm Peel, on which the cathedral church of the diocese stands. This bishopric is said to have been founded by St. Patrick 447. The Manx Church has its own canons and an independent convocation. The see is, for certain purposes, attached to the province of York. There are in the island about 30 places of worship in connection with the Established Church of Man. The livings are, with few exceptions, in the gift of the crown. The principal denominations of dissenters are represented in the island.

The I. of M. has a constitution and government of its own, to a certain extent independent of the imperial parliament. It has its own laws, law-officers, and courts of law. The legislative body is styled the Court of Tynwald, consisting of the lieut.gov. and council—the latter being composed of the bishop, attorney-gen., two deemsters (or judges), clerk of the rolls, water bailiff, archdeacon, and vicar-gen.—and the house, of 24 keys or representatives. A bill is separately considered by both branches, and on being passed by them, is trans-

mitted for the royal assent; it does not, however, become law until it is promulgated in the English and Manx languages on the Tynwald Hill. The house of keys was formerly self-elective; but an election by the people (with certain qualifications) every seven years.

See *The Isle of Man, its History,* etc., by the Rev. J. G. Cumming, M. A., F. G. S.; *History of the Isle of Man,* by Joseph Train, F. S. A. Scot.; *Brown's Popular Guide;* and the works published by the Manx Society.

MANAAR, *mâ-nâr',* GULF OF: between the w. side of the island of Ceylon and Hindustan; divided from Palk's Passage on the n. by the islands Ramisseram and Manaar, and by a low reef called Adam's Bridge. At its n. e. extremity, it is 80 m. in width; at its s. w. limit, nearly 200 miles.

MANACA, *măn'a-ka* (*Franciscea uniflora,* or *Hopeana*): plant of nat. ord. *Scrophulariaceæ,* native of Brazil. The whole plant, especially the root, is of great value in exciting the lymphatic system. It is nauseously bitter, purgative, emetic, emmenagogue, and alexipharmic; in overdoses, an acrid poison. It is much used in Brazil as a remedy for syphilis.

MANACLE, n. *măn'ă-kl* [F. *manicles,* hand-fetters—from *main,* the hand: L. *manĭca,* the sleeve of a garment, a handcuff—from *mănus,* the hand]: a shackle or tie for fastening the hands together; a handcuff; commonly used in the plu. MAN'ACLES, *-klz,* handcuffs: V. to handcuff, to put on fastenings for confining the hands. MANACLING, imp. *măn'ă-klĭng.* MANACLED, pp. *măn'ă-kld:* ADJ. having the hands securely confined or fastened as with manacles.

MANAGE, v. *măn'āj* [It. *maneggiare,* to manage, to exercise: mid. L. *mainăg'ĭŭm,* occupation, the furniture requisite for the occupation of a house: OF. *manege,* the managing of a horse: F. *manier,* to handle—from F. *main;* L. *mănus,* the hand]: to carry on the concerns of, as a house or business; to conduct or direct; to move or use easily; to control; to govern with address; to contrive. MAN'AGING, imp.: ADJ. that conducts or carries on; governing; conducting with frugality and prudence; intriguing. MAN'AGED, pp. *-ājd.* MANAGER, n. *măn'ă-jėr,* one who conducts or directs anything. MANAGEABLE, a. *măn'āj-ă-bl,* easy to be used, directed, or moved; that may be controlled; tractable. MAN'AGEABLENESS, n. *-bl-nĕs,* the quality of being manageable. MAN'AGEMENT, n. *āj-mĕnt,* manner of treating, directing, or carrying on; conduct directed by prudence or contrivance; cunning practice.—SYN. of 'manage': to devise; concert; invent; direct; govern; control; order; wield; transact;—of 'manageable': governable; docile; controllable; tamable;—of 'management': charge; control; conduct; government; administration; direction; guidance; care; disposal; intrigue; contrivance.

MANAGE, n. *măn'āj* [F. *manège,* the management of a horse (see MANAGE 1 and MANÈGE)]: in *OE.,* conduct; administration; discipline; management; government of a horse.

MANAGUA, *mâ-nâ'gwâ:* town of Central America, cap. of Nicaragua, in a healthy and fertile district on the s. shore of Lake M. or Leon. It owes its position chiefly to the rivalries of the cities of Granada and Leon, but partly to its central situation.

MANA'GUA, LAKE OF. See LEON.

MANAKIN, n. *măn'ă-kĭn* [F. and Ger. *manakin:* probably a native name]: genus of beautiful small birds, of the ord. *Insessores,* found in tropical America; called also CHATTERER (q. v.)

MANAKIN, n. *măn'ă-kĭn,* or MANIKIN, n. *măn'ĭ-kĭn* [F. *mannequin,* a layman, a manikin: Ger. *mannchen,* a little man: Eng. *man* and *kin—lit.,* a little man]: a little insignificant man; a figure on which a student may practice the application of bandages.

MANASSAS, *mă-năs'ăs:* town, in Prince William co., Va.; near a creek named Bull Run, and at the place where the Manassas Gap and Alexandria railroads meet. It is about 35 m. s.w. of Washington. Twice during the Civil war Manassas was the scene of engagements. See BULL RUN, BATTLE OF.

MANAS'SAS, BATTLES OF. See BULL RUN.

MANASSAS GAP, ENGAGEMENT OF. Gen. Lee, in retreating from Gettysburg, crossed the Potomac at Williamsport, into the Shenandoah Valley, and 1863 (July 15) marched to Bunker Hill, and occupied the gaps of the Blue Ridge. On 19 July he ordered Longstreet to march next morning to Culpeper Court House, by way of Front Royal and Chester Gap. Gen. Meade crossed the Potomac at Harper's Ferry and Berlin, on the 17th and 18th, and moved up the Loudoun Valley along the eastern side of the Blue Ridge; and on the 21st Merritt's brigade of Buford's cavalry division, pushing well up into Manassas Gap, skirmished with the 17th Virginia infantry, and took 20 prisoners, from whom it was ascertained that Lee was moving up the valley with the evident intention of passing to the east of the Blue Ridge. Meade ordered the Third, Fifth, and Second corps to march upon Manassas Gap, directing Gen. French, commanding the Third corps, then guarding Ashby's Gap, to hasten to Buford's support. Before dark of the 22d French reached Piedmont, and Birney's division was pushed forward to Buford's aid, followed by the remainder of the corps, and at daylight of the 23d entered the Gap and relieved Merritt's cavalry, which moved up to Chester's Gap. Meanwhile, at dawn of the 23d, Hood's division of Longstreet's corps had marched from Front Royal and, relieving the 17th Virginia, was deployed in the Gap, where it was relieved during the morning by Wright's brigade of about 600

men of R. H. Anderson's division, under orders to hold the Gap until relieved by Ewell, then marching from Winchester. Wright's brigade was deployed at the west end of the Gap, and Rodes' division, with two batteries of artillery, coming to its support, drew up about 600 yards in rear, and sent 250 sharpshooters to take position on its left. These dispositions were completed about 2 P. M. Meanwhile Birney's division had advanced, steadily driving in the Confederate outposts and from Wapping Heights, beyond which was Wright's line. About 4 P.M. Spinola's Excelsior brigade and two regiments of Ward's went forward at a charge and, sweeping past Wapping Heights, engaged Wright's men in a close and severe fight, driving them back upon Rodes, who stood firm, the artillery checking the Union advance about dark, Rodes' line not being engaged, and losing but 15 killed and wounded. Wright's loss was 19 killed, 83 wounded, and 66 missing. French's loss was 21 killed and 84 wounded. Ewell fell back to Front Royal during the night. Next morning the Union advance marched to Front Royal, but all of Lee's army had passed and, marching swiftly through Chester and Thornston's gaps, it took position on the south side of the Rappahannock. Consult: *Official Records*, Vol. XXVII.; Humphreys, *From Gettysburg to the Rapidan*.

MANASSEH, *ma-năs'sĕh* [from Heb. *Nasha*, to forget, signifies 'one who causes to forget']: eldest son of Joseph.—At the Exodus, the tribe of Manasseh is said to have had 32,200 warriors, and on entering Canaan, 52,700. It received land on both sides of the Jordan. The e. half embraced the rich pasture-lands of Argob and Bashan, as far as the slopes of Hermon; the w. extended from the Jordan to the Mediterranean, and lay between Ephraim and Issachar.

MANASSEH, King of Judah (13th king): B.C. 710-645 (reigned B.C. 699-645); succeeded his father Hezekiah. He rushed headlong into all manner of idolatry, and seduced the people to follow his example. The vilest abominations of the sensuous and obscene Babylonian worship, with the fierce cruelties of the Amalekite worship of Moloch, defiled the sanctuary of Jehovah, and were maintained with bloody persecution of those who clung to the holy faith of Israel. The sacred writers cannot otherwise express their sense of the enormity of his guilt than by saying that the very heathen never went so far in their practice of abominations as Judah did in those days. They report almost nothing concerning him: their very silence seems to suggest shame and fear concerning such unparalleled wickedness. M.'s subsequent history is differently related in *Chronicles* and in the *Book of Kings*. The Book of Chronicles records his captivity in Babylon, his repentance, and his return to Jerusalem; the Books of Kings say nothing whatever concerning these minor

points, though not inconsistent with them. There is reason to deem his reformation only partial. However this may have been, his reign left an abiding evil in the national life.—The apocryphal composition called the *Prayer of Manasses* is received as canonical by the Greek Church.

MANATEE, or MANATI, n. *măn′ă-tē′*, or MANATUS, or LAMANTIN, popularly called the SEA COW [Sp. *manati*—from a W. I. word]: genus of Sirenia, belonging to the *Manatidæ* (q.v.), distinguished by the rounded tail-fin, and further characterized by the presence of small flat nails at the edge of the swimming paws, and by the structure of the grinders, which have square crowns with two transverse ridges. The species, aquatic herbivorous mammals, inhabitants of tropical coasts, feed not only on algæ, but on the plants which grow along the shore, and are rendered accessible to them by the tide. They live chiefly in shallow bays and creeks, and in the estuaries of rivers, and often ascend rivers to a great distance from the sea. The best known species (*M. americanus*) is found in the W. Indies and on the w. coasts of tropical Africa. It has been found with a length of 9 ft.; estimates of its size much beyond this are not trustworthy. The skin is very thick and strong, and almost destitute of hair. The fingers can be readily felt in the swimming paws, and, connected together as they are, possess considerable power of motion, whence the name M. (prob. from Lat. *manus*, a hand). The M. is found usually in herds, which combine for mutual protection when attacked, placing the young in the centre. When one is struck with a harpoon, the others try to tear out the weapon. The females show great affection for their young. No animal is more gentle and inoffensive than the manatee. It has been tamed and rendered familiar enough to come for food when called. Vast numbers were formerly found in places where it is now comparatively rare, as its capture is easy, and its flesh—variously likened to beef and pork—is held in esteem.—Another species is found on the coast of Florida, and a third on the w. coast of Africa. MANATIDÆ, n. plu. *măn-ăt′ĭ-dē*, aquatic herbivorous mammals, including the *manatee:* formerly considered a family of *Cetacea*, including all the herbivorous section of that order, but now ranked as a distinct order, Sirenia; for though by their aquatic mode of life, their external characters, and by the absence of hind-limbs, they greatly resemble Cetacea, a more profound study has demonstrated that their affinities are really with Ungulates, while those of Cetaceans are with the Carnivora. There are three genera of M., described in the articles DUGONG: MANATEE: STELLERINE.

MANAYUNK, *măn-a-yŭngk′:* suburban part of Philadelphia, in the 21st ward, on the Schuylkill river, near the mouth of Wissahickon creek, and on the Philadelphia and Reading railroad, 7 m. n.w. of Independence

Hall. It is connected with the business centre of Philadelphia by steam and street railroads, steamboats, and an excellent boulevard; has 30 manufacturing establishments, using a capital of $6,000,000, and yielding products valued at $10,000,000; contains 8 churches, 1 national bank (cap. $200,000), water-works, gas and electric-light plants, and post-office and telegraphic facilities; and is noted for its manufactures of paper and cotton and woolen goods, and for its beautiful residences. Pop. (1885) about 10,000.

MANBY, *măn'bĭ*, GEORGE WILLIAM: 1765–1854, Nov. 18; b. Hilgay, near Downham Market, in Suffolk, England. After studying for the army, he served seven years in the militia, and was appointed barrack-master at Yarmouth 1803. A dreadful series of shipwrecks on a particular day in 1807, when H.M. gun-brig *Snipe* was wrecked within 60 yards of the shore, and 67 lives lost, and when 147 dead bodies were found on about 30 m. of coast, led him to the invention of the apparatus known by his name (see LIFE MORTAR AND ROCKET). 1808, Feb. 12, he succeeded in saving the crew of the brig *Elizabeth*, stranded 150 yards from the shore; he sent a rope over to them by means of a shot, and this rope was the means of pulling a boat from the shore to the brig. A career of usefulness was thus commenced, which he followed through a long life. In 1810 a committee of the house of commons voted £2,000 to M., as a recognition of his services. For the Norfolk and Suffolk coasts, he recommended the establishment of mortar-stations at certain intervals: this recommendation was adopted by the house of commons and the government. Capt. M. received a further grant of £5,000 from parliament 1823; to which were added honorary distinctions from many foreign governments. It was estimated that, by the time of his death, nearly 1,000 persons had been rescued from stranded ships by means of his apparatus. His system has been superseded by one more effective: see LIFE MORTAR AND ROCKET: ETC.

MANCH, or MAUNCH, *mânsh* [Fr. *manche*]: frequent charge in English heraldry, meant to represent a sleeve with long pendent ends, of the form worn by ladies in the reign of Henry I.

MANCHA, or LA MANCHA, *lâ mân'châ:* district of Spain, province of Ciudad Real, and the southernmost part of the kingdom of New Castile: see CASTILE.

MANCHE, *mŏngsh:* maritime dept. in n.w. France, formed from the most w. dist. of the old province of Normandy; named from La Manche (the English Channel), which washes its coasts: greatest length, 98 m.; average breadth, 27 m.; 1,426,289 acres. Of the entire area, 940,047 acres are cultivated, and about 235,000 acres are in meadow. The surface is irregular; hills of no great elevation traverse it from north to south. The Vire, the Douve, and the Selune are the chief rivers.

The climate is mild and temperate, but somewhat humid. Flax, hemp, and fruit are extensively cultivated. Immense quantities of apples are grown, from which 44,000,000 gallons of cider are made annually. Horses of the true Norman breed are reared in the pastures, and excellent cattle of large size are bred in the valleys. The dept. is divided into the six arrondissements, St. Lô, Coutances, Vologues, Cherbourg, Avranches, and Mortain. Capital, St. Lô.—Pop. of dept. (1901) 491, 372.

MANCHESTER, *măn'chĕs-ter:* town (incor. 1823) in Hartford co., Conn., on the Hockanum river and the New York and New England railroad; 8 m. e. of Hartford. The township contains the villages of N. Manchester, S. Manchester, Oakland, and Buckland, all of which are noted for their manufactures. M. has the Cheney silk-works employing 1,000 operatives; paper, cotton and woolen mills; gingham, stockinet, needle, soap and electric light and power machine factories. Government and bank-note papers are made at M. The Cheney silk factory is among the largest silk factories in the United States. Pop. tp. (1880) 6,462; (1890) 8,222; (1900) 10,601; (1910) 13,641.

MANCHESTER, *măn'chĕs-ter:* town in Essex co., Mass., on the n. shore of Massachusetts Bay, and at the beginning of the s. side of Cape Ann, 8 m. n.e. of Salem, 22 m. by rail n.e. of Boston; on the Cape Ann branch of the Boston and Maine r. r. It has a picturesque and rocky shore, with fine ocean views, and charming inland drives, and there are many beautiful summer homes of Boston business men, especially at Manchester-by-the-Sea. There is a public library. Pop. (1910) 2,673.

MAN'CHESTER: city and cap. of Hillsboro co., N. H.; settled about 1722; incorporated under the name Derryfield 1751; 1810 its name was changed to M. by an act of legislature; 1846 it was granted a city charter. It is mainly on the e. bank of the Merrimac r., about 18 m. s.e. of Concord, and 46 m. n.w. of Boston; and is the largest city in N. H. Of its people, nearly one-third are foreigners and French Canadians. The city is regularly laid out, its main thoroughfare, Elm street, being 100 ft. wide, with elm trees bordering it for a mile on both sides; there are also several large ornamental squares, three of them containing ponds; in the s.w. part is Valley Cemetery, of considerable extent, while two smaller ones are w. of the river. The Merrimac is here spanned by 5 bridges, connecting with the villages of Amoskeag and Piscataquog. M. is the terminus of several railroads, and a principal station on the Concord, and the Concord and Portsmouth r.r. The assessed value of property in the city (1906) was $34,176,466, while it is the fourth city in manufactures its water-power being abundantly supplied by the Blodgett canal, built around the Amoskeag falls in 1816, and owned by the Amoskeag manufacturing company, whose reservoir has a capacity

of 11,000,000 gallons, which furnishes power for the mills. Among the corporations engaged in the manufacture of cotton and woolen goods are the Amoskeag Co., organized 1831; the Stark mills, 7 years later; the Manchester mills, 1839; the Langdon mills, 1857; and the Amory mills, 1880. The census of 1900 shows that M. has 577 manufacturing establishments with combined capital $22,426,125; employed 19,032 persons; paid wages $7,030,966; value of material used $14,755,-640; value of product $26,607,600. The chief industry is the manufacture of cotton goods, represented by 4 mills with $12,699,055 capital; 10,616 employees; paid in wages $3,553,413; $5,849,329 for materials, value of product $11,723,508. These mills have a total of 478,000 spindles and 15,800 looms, which make nearly 300 miles of cloth per day. The principal goods made are tickings, denims, stripes, ginghams, sheetings, shirtings, print-cloths, balmorals, cotton flannels, cotton duck, delaines, alpacas, etc. Other industries of M. include the construction of steam engines and locomotives, making of paper, edge-tools, carriages, beer, soap, machinery of all kinds, leather goods, wooden-ware, needles and furniture. M. is the seat of the State Reform Schools and various collegiate institutions. There is a R. C. Cathedral at M. also the Sacred Heart hospital, Hospital of Our Lady of Lourdes, St. Vincent's Home for Orphans, other orphan asylums; a public library of 46,000 volumes. High, public and parish schools and other educational institutions. There are several national and savings banks at M. which is well-paved and lighted and embraces in its administration all modern sanitary appliances. The city owns the waterworks, valued at $1,000,000 and with a capacity of 16,000,000 gallons. The police and fire equipments and force are first-rate and well-maintained. There are several daily semi-weekly and weekly newspapers, and opera house and theatre. The city is governed by a mayor, a board of Aldermen and a common council. Pop. (1910) 70,063.

MAN'CHESTER: former town in Chesterfield co. (now a city), Va.; on the James river and the Richmond and Danville railroad; opposite Richmond, of which it is a suburb. It contains several churches, national bank, flour-mills, and important manufactures, including cotton, iron, paper, nails, and tobacco. Pop. (1900) 9,715.

MAN'CHESTER (Sax. *Mancestre*): city, municipal and parliamentary borough of Lancashire, and the great centre of the cotton manufacture of the n.w. of England; on the Irwell, 32 m. c.n.e. of Liverpool, 188 m. n.n.w. of London by railway. On the w. side of the Irwell is the borough of Salford, communicating with that of M. by 10 bridges, and considered as virtually a portion of the city. The area of the borough of M. is 9.9 sq. m.; of Salford, 7.9 sq. m. Pop. (1891) M. 505,343; Salford 198,136; (1901) M. 543,969; Salford 220,956.

M. was incorporated 1838, Salford 1844. M. was made

a bishopric 1847, and received the title of city 1853. Water for the supply of M. is collected on the Lancashire side of Blackstone Edge. In 1877 the city council adopted the proposal to purchase Thirlmere Lake in Cumberland, and convey the water to M. in an aqueduct 100 m. long. The water-works, in which are invested about £3,750,000, and the gas-works, involving about £450,000, belong to the corporation. The manorial and market rights were also acquired by the corporation 1845, for the sum of £200,000. There are four public markets in M., and two in Salford, besides the cattle-market. Smithfield Market in M. is more than four acres in extent, and is entirely covered. The market-tolls and rents of M. alone amount to £35,000 per annum. The sale of gas makes a profit of some £44,000 per annum, which is devoted to improvements in the borough. In 1845–6 a public subscription founded three parks of about 30 acres each, and the corporation has since acquired a fourth park of about 60 acres. M. was the first borough to take advantage of the Free Libraries Act, which allows an appropriation of a penny in the pound on the local assessment for parks, libraries, and museums; and here also was established the first free lending library in England. Several branch lending libraries and a museum have since been established in M., and a reference library, one branch lending library, and an excellent museum in Salford; so that, including the old college library founded by Sir Humphrey Cheetham, 1662, the people of M. and Salford have the free use of more than 130,000 vols. of ancient and modern literature, besides newspapers and periodicals.

The two boroughs have about 100 churches belonging to the establishment. The cathedral, commonly called the *Old Church*, built 1422, is a very fine Gothic structure, and has latterly undergone extensive restoration in its original style. There are 17 Rom. Cath. and 180 dissenting chapels, some of which, especially St. John's Catholic Cathedral, the Church of the Holy Name, and Cavendish Chapel (Congl.), are very beautiful specimens of modern Gothic architecture. There are 3 Jewish synagogues, 4 German churches, and 1 Greek church. The principal public buildings for secular purposes are the Town Hall, built at the cost of more than a million sterling, in Gothic, the most important municipal building in Great Britain, and perhaps in Europe; the Royal Infirmary, the Royal Exchange, the Royal Institution, all in Grecian style; the Free Trade Hall, in Composite; and the Assize Courts, in decorated Gothic. There is a home for 150 convalescents in the suburbs, founded by Robert Barnes, former mayor of Manchester. Many of the warehouses of the merchants are palatial in appearance, and the business transacted is quite in accordance with the magnitude of the buildings. The floor of the Royal Exchange contains about 5,170 sq. yards, and yet is thronged on market-day. M. has four private and five

joint-stock banks, beside branches of the Bank of England, and the National Provincial Bank. The celebrated Bridgewater canal connects M. with Liverpool, and access is obtained also for heavy barges by the rivers Irwell and Mersey. A great ship-canal from the sea (35 miles long, 172 ft. wide, 26 ft. deep, cost $75,000,000) was opened 1894, Jan. 1, enabling cargoes, especially of cotton, to be delivered at the wharves of M.—avoiding transhipment or railway carriage *viâ* Liverpool. In Albert square a Prince Albert memorial has been erected. A bronze statue of Richard Cobden stands in St. Ann's square; and there is one of Cromwell (unveiled 1875) at the foot of Victoria street. M. publishes 15 journals and newspapers, five of which are issued daily.

The chief trade is cotton spinning and manufacturing, including calico-printing and bleaching and dyeing; but there are also large manufactures of silk and mixed goods, of small-wares, of machinery and tools, of paper and chemicals; moreover M. is a dépôt for all kinds of textile fabrics, and does a very large export trade. There are ordinarily employed in the cotton mills about 60,000 persons, who earn about £30,000 per week in wages. There are at least 7,000 skilled mechanics constantly engaged in the production of steam-engines, spinning-mules, looms, and other machinery, chiefly for the production of the various textile fabrics; their wages average about 32*s.* each per week, and these need some 1,500 laborers to assist them.

The educational endowments of M. are small compared with its population. There is a hospital school for 100 boys, founded by Sir Humphrey Cheetham, and incorporated by Charles II.; there is also a grammar-school, with about 250 free, and 350 paying pupils, founded 1519, by Hugh Oldham, Bp. of Exeter. According to a school-board return 1873, the number of day-scholars in M. was 38,500 in actual attendance; and in evening schools and literary institutions there are from 4,000 to 5,000 pupils. In 1846, John Owens, a Manchester merchant, left £100,000 to found a college for secular instruction. In 1873, the new building of Owens College (q.v.), the centre of the recently chartered Victoria University, was erected at a cost of about £90,000. M. possesses besides, a Literary and Philosophical Soc., Royal Botanical Gardens, a School of Art, an Acad. of Fine Arts; with Commercial Schools, and a High School for girls; the Lancashire Congl. College, and Bapt. and Wesleyan Colleges. A mechanics' institution was commenced 1824, and is still carried on successfully. It has day and evening classes, a good library, a reading-room, and all necessary appliances for secondary education. Similar institutions on a smaller scale exist in Salford, and in the out-townships of Longsight, Rusholme, Harpurhey, Cheetham Hill, and Pendleton. In M. originated the agitation for free-trade (see ANTI-CORN-LAW LEAGUE). M. was also the first place to secure the privilege of inland bonding for articles chargeable

with customs-duties, and now produces a large revenue from that source.

Camden, who died 1623, says: 'Where the Irk runs into the Irwell, on the left-hand bank, and scarce three miles from the Mersey, stands that ancient town called in *Antoninus* (according to different copies), *Mancunium* and *Manutium*. Perhaps, as an inland town, it has the best trade of any in these northern parts. The fustian manufacture, called *Manchester cottons*, still continues there; this, with a great variety of other manufactures, called *Manchester wares*, renders not only the town itself, but the parish about it rich, populous, and industrious.'—The parish of M. covers a large area, reaching to Stockport, Oldham, and Ashton-under-Lyne, and in the early part of the 16th c. was reckoned to have 20,000 communicants.

MANCHESTER SCHOOL, n.: name applied by those of the opposite view to the early advocates of free trade, whose headquarters were at Manchester, England. Their distinctive tenet was free trade, notably in corn (see CORN LAWS); but through their chief leaders Cobden and Bright, they were identified also with protests against a spirit of militarism which led to their being called the 'peace-at-any-price' party.

MANCHET, n. *măn′chĕt* [F. *manchette*, a wrist-cuff—dim. of *manche*, a sleeve: Scot. *mane*, light white bread: Teut. *mœne*, a fine flour-cake shaped like a half-moon]: in *OE.*, a loaf or cake of fine white bread—named from its size and shape.

MANCHINEEL, n. *măn′shĭn-ēl* [It. *mancinello;* Sp. *manzanillo*, small apple], (*Hippomane Mancinella*): tropical American tree of nat. ord. *Euphorbiaceæ*, remarkable for the poisonous properties of the acrid milky juice with which every part of it abounds. A drop of this juice, which is of pure white color, burns like fire if it falls upon the skin, and the sore which it produces is very difficult to heal. The Indians of tropical America use it for poisoning their arrows. The fruit is in form, color, and scent not unlike a small apple, and contains a nut about the size of a chestnut. The fluid in the fruit is milder than that of other parts of the tree, but its acridity is so great as immediately to repel any who, tempted by its appearance and citron-like fragrance, ignorantly attempt to eat it. The leaves are alternate, ovate, serrate, and shining. It is said that, owing to the volatile nature of the poisonous juice, persons have even died from sleeping under the shade of the M. tree. Much seems to depend on the state of the atmosphere, and there is good evidence that the rain or dew falling from the branches of the M. does produce injurious effects. The fruit of M., dried and pulverized, is diuretic; the seeds are excessively so. The tree is large and the wood is hard, durable, beautifully clouded, and well suited for cabinet-making. Whole forests of M. at one time existed in Martinique, which have been burned

down. It grows chiefly in the vicinity of the sea. *Cameraria latifolia,* another W. Indian tree, of nat. ord. *Apocynaceæ,* is called BASTARD MANCHINEEL, from its resemblance to M. in its poisonous properties.

MANCHU, or MANTCHU, n. *măn-chô':* the language spoken in Manchuria, and at the court of China.

MANCHURIA, or MANTCHURIA, *măn-chô'rĭ-a:* territory in Asia, belonging to the Chinese Empire; bounded by the Amur on the north; the Usuri and the Sungacha on the east, separating it from Russian territory of Orochi; the Shan-Alin range on the south, separating it from Korea; and a portion of the Khingan mountains, the Sira-Muren, and the district of the upper Sungari, which separate it on the west, from the desert of Gobi. Previously to the incursions of the Russians on the north, the area of this territory was about 682,000 square miles; it is now about 378,000 square miles, nearly one-half having passed into the possession of the Russians, who concluded a treaty with the Chinese 1860, Nov. 14, in which was finally made over to them all the territory east of the Usuri and north and east of the Amur. Manchuria is divided into three provinces, Shing-King—formerly Liao-tung (pop. more than 5,000,000), and the chief town of which, Mukden, is the seat of government for the three provinces—Kirin or Girin (pop. 6,000,000; capital Kirin), and Helungkiang, or the Amur province (pop. 1,500,000; capital Helungkiang). The chief city in the province is Tsitsihar with a population of 60,000. The country is mountainous, densely wooded in the south, but consisting chiefly of prairies and grass-land in the north. It is well watered and fruitful in the valleys. The rivers are the Amur (the northern boundary), the Usuri (the eastern boundary), and the Sungari, which waters the two provinces Kirin and Helungkiang. The Sungari is about 1,200 miles in length; its banks, the most densely-peopled region of Manchuria, are low and fertile, and its general course is northeast to its junction with the Amur. About 200 miles from its source it passes the flourishing trading city of Kirin, lat. 43° 40′ n., inhabited by Manchus and Chinese, but by the latter in far greater numbers. The city of Mukden, on the Sira-Muren, is large and beautiful, surrounded by walls (pop. 150,000). In 1631 it was the seat of government of the empire of Manchu. At the time of the Boxer trouble in China (1900) Russia seized a portion of Manchuria, and afterward tried to force China to cede the region to her. China declined, and in 1903 Russia announced that she would hold Manchuria for six years. Japan used every means in her power to induce Russia to withdraw, and these proving futile, commenced hostilities in 1904. (See RUSSO-JAPANESE WAR; PORTSMOUTH, TREATY OF.) She was victorious on land and on sea so that a treaty was signed in 1905, September, by which both Russia and Japan agreed to evacuate Manchuria. The Japanese took over the lease of the Liao-

tung peninsula which had been granted to Russia. By a subsequent treaty signed in 1905, December, China leased the whole of this peninsula to Japan, and granted the control of the railways as far as Changchun. Permission was also granted to construct a railway from Antung to Mukden and to open 16 ports and cities of Manchuria to foreign trade. Port Arthur and Dalny (Talienwan) are on the Liaotung peninsula and are occupied by the Japanese. The railways in Manchuria extend from the borders of the Chinese province of Chihli to Mukden and also to Port Arthur. From the latter place the railway runs northward a distance of 615 miles to Harbin, where it joins the Trans-Siberian railway connecting with Vladivostock. A branch line connects Changchun with Kirin and is 70 miles in length. For early history of Manchuria see CHINESE EMPIRE.

The Manchus are the present rulers of China, who gradually subjugated the country; the first emperor of the new dynasty, Shunche, succeeding the last of the Mings 1644. They are not a nomadic race like the Mongols, but are given to agriculture or hunting, according to the country they inhabit. They are of lighter complexion and slightly heavier build than the Chinese, have the same conformation of the eyelids, but rather more beard, and their countenances indicate greater intellectual capacity. Literary pursuits are more esteemed by them than by Mongolians, and they are less controlled by the priesthood. The Manchus, in short, may be regarded as one of the most improvable races in central Asia, if not on the continent. But at present they are dying out, or at least being merged and lost in the steady growth of the Chinese.—Pop. of Manchuria, formerly stated 4,000,000; now estimated 16,000,000.

MANCHUS: an Ural-Altaic people. See MANCHURIA: TUNGUS.

MANDALAY, *măn'da-lā:* capital of Burmah (devastated by incendiary fires since the British occupation in 1886), is 3 miles from the Irrawaddy river, a little n. of the former cap. Amarapura (q. v.), and 350 m. n. of Rangoon, the great Burman sea-port. In 1856 its site was occupied by cultivated fields; but having been chosen by the king as the position for a new capital, was in the following year ready to receive the court. The city is laid out in three parallelograms, of which the inner two are walled. Within the inmost are the palace, and offices of govt.; in the second inclosure are the houses of the civil and military officers, and the soldiers; while the outer city is inhabited by the other classes. Mandalay was mostly burnt 1883. Pop. 183,816.

MANDAMUS, n. *măn-dā'mŭs* [L. *mandāmus*, we command]: writ issued by the highest court having jurisdiction, in the form of a requirement of some act as the duty of an inferior court, or of a person or corporation. It is granted, not to enforce rights provided for in the

law courts—e. g., ordinary rights of contract; but on occasions for which the law has established no specific remedy. Its issue rests entirely within the discretion of the court. An example of its application is to compel the production of the records and documents of a corporation when they are requisite as evidence in a suit by one of the corporators. Mandamus corresponds to the writ of mandamus from the king's bench in English law; and in the United States it is also 'a mode of exercising appellate jurisdiction; also a proceeding ancillary to a judgment previously rendered, in exercise of original jurisdiction.'

MANDANS, *măn'danz:* tribe of American Indians of the Dakota family, located near Fort Berthold, on the upper Missouri river, in the state of N. Dakota, and believed by many writers to be descendants of an early Welsh colony. Nine Mandan villages were discovered by the whites in the latter part of the 18th c.; in 1803 the Mandans occupied two villages, one on each side of the Missouri river, in the Arickaree country; in 1837 they were nearly exterminated by small-pox; in 1825 and 66 they made treaties with the United States; and since 1870 they have occupied a reservation in common with the Arickarees and Minnetaries. They are light in color, friendly with the whites, live chiefly by agriculture, but do not appreciate civilization. In 1880 they numbered 225; (1884) 311; (1899) 253.

MANDARA, *mân-dâ'râ,* or WANDALA, *wân-dâ'lâ:* kingdom in central Africa, since 1863 a dependency of Bornoo; cap. Doloo. It is surrounded by the Mendefy Mountains, is a fertile, well-watered valley, and is inhabited by negroes of the Mohammedan faith, who raise a famous breed of horses, and manufacture cotton goods and iron articles. The Mandarans are more active and intelligent than the surrounding tribes of negroes, but are regarded by them as cowards. They had a war with Bornoo 1863, in which their former cap., Mora, was destroyed, and on adopting the Mohammedan faith they were guaranteed a semi-independence. Pop. of cap. 30,000.

MANDARIN', v.: in *dyeing,* to give an orange color to silk or wool by the action of nitric acid, which partially decomposes the surface of the fibre.

MANDARIN, *măn'da-rĭn:* town in Duval co., Fla., on the e. branch of St. John's river, about 15 m. above Jacksonville. The orange-groves in its vicinity are very fine, and the product is large. In recent years it has become a favorite winter resort for northern people who require a mild, equable climate. Pop. 1,261.

MANDARIN, *mân'da-rēn'* [Port. *mandarim*—from *mandar,* to hold authority—said to be from Malay, *mantri,* a counselor: comp. mid. L. *mandārĭă,* jurisdiction—from L. *mando,* I command]: general term applied by the

western nations to Chinese officers of every grade. It is derived from the Portuguese mandar, to command; the Chinese equivalent is *kwan*. There are nine ranks, each distinguished by a different-colored ball or button on the apex of the cap, by a peculiar emblazonry on the breast, and a different clasp of the girdle. The balls are 1, ruby; 2, coral, 3, sapphire; 4, blue opaque stone; 5, crystal; 6, opaque white shell; 7, worked gold; 8, plain gold; 9, silver. Theoretically, these grades are indicative of relative merit, but as office and titles are sold to a great extent, the competitive examinations, which are the only legitimate road to distinction, have lost much of their value. A mandarin is not allowed to hold office in his native province, the intention being to prevent intrigue, and to draw to Pekin the ambition and talent of the country, where temporary employment is given in subordinate offices, prior to appointments to the provinces. He is not allowed to marry in the jurisdiction under his control, nor own land in it, nor have a near relative holding office under him; and he is seldom continued in office in the station or province more than three years—a system of espionage which serves further to strengthen the imperial government. It is incumbent on every provincial officer to report on the character and qualifications of all under him, which report he periodically transmits to the board of civil office; the points of character are arranged under six different heads, viz.: those who are not diligent, the inefficient, the superficial, the untalented, the superannuated and the diseased. According to the opinions given in this report, officers are elevated or degraded so many steps in the scale of merit, like boys in a class. They are required also to accuse themselves when remiss or guilty of crime, and to request punishment.

MANDARIN DUCK, *măn-da-rēn':* species of duck brought from China and Japan; brilliant in plumage, green-crested, and with fan-shaped tuft of feathers on the back. These ducks, it is said, after mating once seek no other partners.

MANDATE, n. *măn'dāt* [F. *mandat*, charge, mandate —from L. *mandātus*, enjoined, commanded—from *mănus*, the hand; *dărĕ*, to give—*lit.*, to put into one's hand]: command; order; written authority to act for another; a rescript of the pope: ADJ. applied to the bread distributed to the poor on *Maunday:* see MAUND 1, and MAUNDAY. MANDATORY, n. or MANDATARY, n. *măn'dă-tėr-ĭ*, person to whom the pope has given a mandate or order for a benefice: one to whom a command or charge is given; one who undertakes under written authority to do something for another. MANDANT (see MANDATE, in Law). MAN'DATORY, a. containing a command; preceptive; directory.

MAN'DATE, in Law: contract (*mandatum*) in Roman law, in which one party employed another to manage some interest for him gratuitously; one being called a man-

dant, the other a mandatory. The essentials and the terminology are retained in most of the modern legal systems, though not usually as constituting a distinct form of contract.—In the United States (see Story) Mandate denotes the contract known generally as gratuitous bailment. It is restricted to personal property, and the delivery of something to the bailer is requisite to it. It differs from Deposit (q. v.) in the fact that not the custody of the thing deposited, but something to be done respecting the thing, is its principal feature—though custody is involved. As it is not a mandate if the bailee derives any benefit whatever from the service, it follows that a mandatary is responsible for loss of or for injury to the thing delivered to him, only when it is caused by his gross negligence. The contract of mandate may be in writing or by word only, and made very solemnly or in the simplest way; in either case the law is the same.

MANDERSON, *măn'dėr-son,* CHARLES FREDERICK: lawyer: b. Philadelphia, 1837, Feb. 9. He received a public-school education; removed to Canton, O., 1856; was admitted to the bar 1859; elected city attorney 1860; entered the Union army as captain 1861, Apr.; served with distinction in Mississippi, Alabama, Tennessee, Kentucky and Virginia; and resigned with rank of brevet brigadier-general volunteers 1865. He then resumed practice of law at Canton; was district attorney two terms; removed to Omaha 1869; was city attorney there six years; was elected U. S. senator as a republican 1882; and re-elected 1888, being chosen speaker pro tem. in two Congresses, 1889-93. In 1890 he was chairman of the committee on printing, and member of the committees on Indian affairs, military affairs, and territories, and others. Since 1895 he has been solicitor for the Burlington system of railroads, west of the Mississippi; and was president of the American Bar Association in 1900-1. He has published *The Twin Seven Shooters* (1902), etc.

MANDEVILLE, *măn'dėh-vĭl,* JEHAN DE (known as Sir JOHN): old English traveller: b. St. Albans about 1300; said to have died 1371, Nov. 17. Prompted by curiosity or love of adventure, he left his native country about 1322, and, as his book claims, visited the Holy Land, served under the Sultan of Egypt and the Great Khan of Cathay (China), and after 33 years' wandering, through Europe, Asia, and Africa, returned to England, where he wrote an account of his travels in Latin, French, and English. He is said to have died at Liége 1371; but doubt has been thrown on this; and contemporary confirmation is lacking of even the existence of such a man as the Jehan de Mandeville who claimed to be the writer of his own travels. Mandeville's work is not of great value for historic geography, as he states not only what came under his own observation, but also what he heard; and he was credulous enough to admit what are now regarded as absurd and monstrous fables. The common notion

of his being pre-eminently a 'lying' traveller is therefore in all likelihood not well founded. Leland the antiquary even says that he had the reputation of being very conscientious; but it has been shown that he took much of his material from older writers not generally read. His book is very interesting, with its quaint, terse, simple style, and its curious subject-matter: it was long exceedingly popular, and was translated into many languages. A MS. of M.'s travels, as old as the time of the author, exists in the Cottonian Library. The first ed. printed in England is that by Wynkin de Worde (Westminster 1499); the last, with Introduction, etc., by J. O. Halliwell, was published in London 1839 (reprinted 1866).

MANDIBLE, n. *măn′dĭ-bl* [L. *mandib′ŭlum*, a jaw—from *mando*, I chew]: the jaw, especially the lower jaw; the instrument of chewing; either jaw of a bird; the jaw of an insect; the beak-like jaw of a cuttle-fish. MANDIBULAR, a. *măn-dĭb′ū-lėr*, pertaining to the jaw. MANDIB′ULATE, a. *-ū-lāt*, having mandibles; jaw-shaped. MANDIBULATA (or MANDIBULATED or MASTICATING INSECTS), insects (q.v.) having their mouth of the structure described under *Coleoptera*. They comprise the orders *Coleoptera*, *Orthoptera*, *Neuroptera*, and *Hymenoptera*. The *haustellate* mouth—formed for suction—is regarded as a modification, in all its separate parts, of the mandibulate mouth.

MANDINGOES, *măn-dĭng′gōz:* strictly speaking, inhabitants of the most s.-westerly territories belonging to the great w. African race of the Wangarawa (sing. Wangara); inhabiting a district in lat. 8° to 12° n., and between the w. coasts and the head waters of the Senegal and Niger. The name, however, as generally used, is applied to the whole nation of the Wangarawa, comprising a pop. estimated by Dr. Barth 6,000,000 to 8,000,000. The original seat of the M. is said to be Manding, a small mountain country on the e. sources of the Senegal, whence, partly by conquest, partly by emigration, they have spread themselves over a most extensive tract, and now comprise a variety of tribes. The M. are black in color, tall and well shaped, with regular features, and are, generally speaking, a fine race, capable of high civilization and organization, great travellers, fond of trading, and remarkable for industry and energy. Of the neighboring nations, they were the first who embraced Islamism. The greater portion of them are now Moslems, and are zealous propagators of their religion.

MANDIOC, n. *măn′dĭ-ŏk*, or MANIOC, n. *măn′ĭ-ŏk* [*manihot*, native Indian name]: plant cultivated in tropical Amer. for the fecula contained in the stems, tapioca being one of its products: called usually MANIOC. (q.v.).

MANDOLIN, or MANDOLINE, n. *măn′dō lĭn* [It. *mandòla*]: very small musical instrument of the lute species. The body of the M. is shaped like a shell, formed of a number of narrow pieces of different kinds of wood, bent into the shape, and glued together. On the open portion of the body is fixed the sounding-board, with a finger-board and neck like a guitar. The Neapolitan M., which is the most perfect, has four double strings, which are tuned, beginning with the lowest, G, D, A, E. The Milanese M. has five double strings, tuned G, C, A, D, E. The sound of the M. is produced by a plectrum in the right hand, while the left hand produces the notes on the finger-board. The M. is used chiefly for accompaniment; in the beauty and quality of its sound, it differs from all other stringed instruments.

MANDORE, n. *măn-dōr′* [F. *mandore*—from It. *mandōra*]: a sort of four-stringed lute or guitar.

MANDRAGORA, n. *măn-drăg′ō-ră* or *măn′dră-gō′ră:* Latin and OE. spelling of the word MANDRAKE (q.v.).

MANDRAKE, n. *măn′drāk* [L. and Gr. *mandrag′oras*, the plant mandrake], (*Mandragora*): genus of plants of nat. ord. *Solanaceæ*, nearly allied to Belladonna (q.v.). Two species are described by some botanists, the AUTUMNAL M. (*M. autumnalis*), which flowers in autumn, and has lanceolate leaves and ovate berries; and the VERNAL M. (*M. vernalis*), which flowers in spring, and has oblong-ovate leaves and globose berries. Both are natives of s. Europe and of the East, and are united by many into one species (*M. officinarum*). The root is large and carrot-like, and from it the leaves spring with

Mandrake (*Mandragora officinarum*).

no apparent stem, and among them the stalked whitish flowers. The calyx and corolla are 5-cleft, there are five stamens, and the fruit is a one-celled berry, about the size of a sparrow's egg. The whole plant has a very

fetid narcotic smell; but the fresh berries when cut or bruised, have a pleasant odor like that of wine or apples, and two or three may be eaten without inconvenience. All parts of the plant, however, have poisonous properties like those of belladonna, but more narcotic, for which reason a dose of the root was formerly sometimes given to patients about to endure surgical operations. The ancients were well acquainted with the narcotic and stupefying properties of M., and it was a common saying, of a sleepy or indolent man, that he *had eaten mandrake*. The root often divides into two, and presents a rude resemblance to the human figure; and human figures were formerly often cut out of it, to which many magical virtues were ascribed. Sometimes the roots of the bryony were employed instead of those of the M., and sold under the name of *M. root*. From the most ancient times, aphrodisiac virtues have been ascribed to the M., which was therefore supposed to cure barrenness. See Gen. xxx. 14–16. The same reputation has been attached in America to the berries of the nearly allied genera, *Himeranthus* and *Jaborosa*. Many fables connected with the M. are recorded by ancient writers—as that it shrieks when torn out of the ground.

MANDREL, n. *măn′drĕl* [F. *mandrin*, a punch, a mandrel]: the revolving shank of a lathe to which turners affix their work; a round bar on which plumbers form tubing, etc.

MANDRIL, or MANDRILL, n. *măn′drĭl* [F. *mandrille*; Sp. *mandril*]: species of monkey attaining nearly the height of a man, and of extraordinary and hideous appearance; a kind of baboon (q.v.).

MANDU, *mân-dô′*: extensive deserted city of India, in the state of Dhar, in Malwa, lat. 22° 20′ n., long. 75° 27′ e. The circumference of the ramparts is said to be 37 m. The greatest and least injured of the ruined buildings is the Jama Masjit, or Great Mosque, the area of which is raised several yards above the ground, and is reached by a handsome flight of steps. The mausoleum of Hoshung Ghori, king of Malwa, is a massive building of white marble. According to Malcolm, M. was founded A.D. 313.

MANDUCATE, v. *măn′dū-kāt* [L. *manducātus*, chewed]: to eat by chewing. MAN′DUCATING, imp. MAN′DUCATED, pp. MAN′DUCABLE, a. *-kă-bl*, that can be chewed. MAN′DUCA′TION, n. *-kā′shŭn*, the act of chewing. MAN′DUCA′TORY, a. *-kā′tėr-ĭ*, pertaining to or employed in chewing.

MANDURIA, *mân-dô′rē-â* (formerly *Castel-Nuova*): town in the Italian province of Lecce, 20 m. e. of Taranto. Pop. about 9,000. It has two celebrated wells, one of which was minutely described by Pliny, and is remarkable for the unalterable level of its waters. Near it stood the town of Manduria, of which relics are extant.

MANE, n. *mān* [Icel. *mon;* O. Dut. *mane;* Ger. *mähne;* W. *mwng;* Gael. *muing,* a mane]: the long hair on the upper part of the neck of a horse or other animal. MANED, a. *mānd,* having a mane.

MANEE'SA. See MANISA.

MANÈGE, n. *măn-āzh'* [F. *manège,* the management of a horse—from F. *main;* L. *mănus,* the hand: It. *maneggio,* a managing, a handling, a riding-school]: the art of breaking-in and training horses; a school for teaching horsemanship, or for training horses; a riding-school.

MANEH, n. *mā'nā* [Heb.]: a Scrip. weight equal to about 2 lb. 3 oz. troy; in money, equal to 60 shekels of silver, and to 100 shekels of gold.

MANEQUIN, n. *măn'ĕ-kĭn* [a corruption of the familiar term *manikin,* a little man]: an artist's model of wood or wax.

MANES, n. plu. *mā'nēz* [L. *mānēs*]: term used by the anc. Romans for the ghosts, shades, or souls of departed persons. See LARES.

MA'NES: another name for Mani or Manichæus. See MANI.

MANES WORSHIP: from Roman *Manes* (q. v.), a term to denote the worship of the dead, whether of an ancestor of the particular worshipper or of some deified hero of his race. Herbert Spencer thinks it developed from the belief in an other self, which survived after death, and that manes worship was the outcome of a desire and endeavor to propitiate the ghost. Sir John Lubbock says of manes worship that it 'is natural development of the dread of ghosts.'

MANET, *mâ-nā,* EDOUARD: French painter: b. Paris 1832; d. there 1883, April 30. Sprung from a family of lawyers, he was destined for the same profession and sent to travel in South America to distract his mind from a youthful resolution to become a painter. But on his return to Paris in 1850 he insisted on entering the studio of Couture, from whom he seems to have received little inspiration; but after his travels in Germany, Holland, and Italy, and much study of Rembrandt, Tintoretto, Velasquez, and Goya he launched out into an entirely new style, which has been denominated Impressionism. He emphasized what may be styled the light values of color and disregarded the relative or corresponding values of conventional art. His breadth of treatment sometimes seemed to end in the flattest naturalism, and the influence of the photograph is manifest in all his pictures. In the Salon of 1861 he exhibited the *Guitar Player;* and his next canvas, *Breakfast on the Green,* created much discussion, from the daring manner in which the painter had grouped nude female figures with men in conventional dress. Being excluded from the Salon, he founded his Salon of Rejected Pictures, and became the head of

the new school of Impressionists. Among his most characteristic pictures are *Boy with a Sword* (1860), in the New York Metropolitan Museum; *Le Bon Bock,* a portrait of Belot, the engraver, drinking beer, which is familiar from many reproductions; *The Garden* (1874), an open air scene, which reveals all the special features of the new school. His *Buffet at the Folies-Bergères* reveals his tendency toward the portrayal of low life. He was also active in the execution of pastels, and illustrated Cros, Champfleury and Poe. Consult: Zola, *Edouard Manet* (1867); and Bazire, *Edouard Manet* (1884).

MANETHO, *măn'ē-thō,* or MANETHO SEBENNYTA: celebrated Egyptian historian: native of Sebennytus, in the Delta, and of the priestly order. He is believed to have lived in the reigns of Ptolemy I. and II., and to have written in the reign of Ptolemy I. (B.C. 323-285), or of Ptolemy II. (B.C. 285-247). According to some, he was priest of Diospolis or Heliopolis; others contend that he was high-priest of Alexandria. His name has been interpreted 'beloved of Thoth'; in the *song* of Lagos and Ptolemy Philadelphus, *Mai en tet,* or *Ma Net,* 'beloved of Neith'; but both interpretations are doubtful. Scarcely anything is known of the history of Manetho himself, and he is renowned chiefly for his Egyptian annals. On the occasion of Ptolemy I. dreaming of the god Serapis at Sinope, Manetho was consulted by the monarch, and in conjunction with Timotheus of Athens, interpreter of the Eleusinian mysteries, declared the statue of Serapis, brought by orders of the king from Sinope, to be that of the god Serapis or Pluto; whereupon the god had a temple and his worship inaugurated at Alexandria. The fame of Manetho was much increased by his writing in the Greek language, and so being enabled to communicate from Egyptian sources a more correct knowledge of the history of his native country than the Greek writers who had preceded him. Of this history, only extracts given by Josephus in his work against Apion, and an epitome by Eusebius and other ecclesiastical writers, remain. It appears to have been written in a compendious annalistic style of narrative, resembling the accounts given by Herodotus. The work of Manetho was in three books, the first began with the mythic reigns of gods and kings, and ended with the 11th dynasty of mortals; the second continued the history from the 12th to the 19th dynasty; the third from the 20th to the 30th dynasty, when Egypt fell under the dominion of Alexander the Great. The reigns of the gods are given as amounting to 24,900 years, and the epoch of Menes, founder of the monarchy, commenced 3,555 years before Alexander (B.C. 332). The difficulties attending the reconciliation of this chronology with the synchronistic history of the Hebrews, Greeks, and other nations, have given rise to numerous speculations and chronological systems since the revival of learning, by Scaliger, Freret, Marsham, Usher, Bunsen, Böckh,

Lepsius, Poole, and others. The confusion in which the lists of kings have been transmitted, the ciphers of the lengths of each reign not agreeing with the summations of the durations of the dynasties, and these, again, differing from the total period assigned to the existence of the Egyptian monarchy, has given rise to two or three schools of chronology. The so-called long chronology, which supposes, with Scaliger and Böckh, that the 30 dynasties followed consecutively one after the other, has carried back the epoch of Menes to B.C. 5702. The short chronology, or that which endeavors to square the dates of Manetho with the dates popularly accepted as developed from the Hebrew chronology (B.C. 4004 for the creation of the world), on the contrary, assumes that several of the dynasties were contemporary, and that some of Manetho's intervals, such as that of the rule of the Shepherd-kings, have been either exaggerated or misunderstood. The accession of newer and better information from the original sources of Egyptian monuments, papyri, and other documents, has considerably enhanced the general value of the history of Manetho, which, prior to their discovery, had fallen into discredit. But the restoration of the history of Manetho, notwithstanding all these resources, and the positive epoch of the monarchy, are still to be sought, though certain dynasties, in the 2d and 3d books of his work, can be reconciled with monumental evidence. Besides the true work of Manetho above cited, another work, *Sothis*, or the 'Dogstar' (in allusion to the cycle of heliacal rising of that star of 1461 years) dedicated to Sebastos or Augustus, the title of the Roman emperors, and not found in use before that period, has been handed down. This work seems to have been added by the epitomizers; and another work, called the *Old Chronicle*, in which the history was arranged according to cycles, was compiled by them. Besides the history, Manetho wrote *Tôn Physikôn Epitome* (Epitome of Physics), treating on the origin of gods and the world, and the laws of morality; and another work on the preparation of the sacred *kyphi*, a kind of frankincense or aromatic food. The astronomical work called *Apotelesmata* is a spurious production of the 5th c. after Christ.

Suidas, *voce* Manetho; Josephus, *Contr. Apion*, I. 3, 9; Bunsen, *Ægyptens Stelle*, Bd. II.; Fruin, *Manethon. Reliq.* (8vo. Leyd. 1847); Böckh, *Manetho* (8vo. Berl. 1845).

MANEUVER. See MANŒUVRE.

MANEY, GEORGE: American soldier and diplomat: b. Franklin, Tenn., 1826, Aug. 24; d. Washington, D. C., 1901, Feb. 9. He was educated at the University of Nashville, fought in the Mexican War (1846-7), in 1849 was admitted to the bar, and in 1849-61 practiced law. On May 1, 1861, he became colonel of the 1st Tennessee infantry, and at Shiloh, 1862, April 6-7, he commanded first his regiment and later the 2d brigade of the 2d division. Promoted brigadier-general for his conduct at

Shiloh, he commanded the 3d brigade of Cheatham's division in Bragg's army at Murfreesboro, 1863, Dec. 31-Jan. 3, and Chickamauga, 1863, Sept. 19-20, subsequently was appointed to the command of Cheatham's division, and participated in the battle of Atlanta, 1864, July 22. In 1876 he was nominated by the Republican party for the governorship of Tennessee, but before the election retired from the contest. He was minister to Colombia in 1881-3, and to Paraguay and Uruguay in 1889-93. In 1884 and 1888 he was a delegate to the Republican national conventions of those years. In 1868-77 he was also president of the Tennessee and Pacific railway.

MANFRED, *măn'frĕd*, King of Naples and Sicily: about 1231-1266, Feb. 26 (reigned 1258-1266); b. Sicily; natural son of Emperor Frederick II. by Blanca, daughter of Count Bonifacius Lanzia. On his father's death, 1250, he received the principality of Tarentum, and in the absence of his half-brother, Konrad IV., acted as regent in Italy. Notwithstanding Konrad's dislike to him, Manfred, with rare fidelity, bravely defended his sovereign's interests against the machinations of Pope Innocent IV.; and after Konrad's death, which the pope accused him of having caused, he was acknowledged regent of Apulia, in name of his nephew Konradin (q. v.). The pope, however, renewed his pretensions to Apulia, and compelled Manfred to flee for shelter to the Saracens, by whose aid he defeated the papal troops at Foggia, 1254, Dec. 2, and again obtained possession of Apulia, to which he soon added Calabria. The new pope, Alexander IV., caused a crusade to be preached against him; but Manfred, steadily pursuing his victorious career, became, 1257, master of the whole kingdom of Naples and Sicily. On the rumor of Konradin's death, he was crowned king at Palermo, 1258, Aug. 11, and immediately was excommunicated by the pope, together with his adherents, among whom were the first prelates of the kingdom; but Manfred invaded the papal dominions, levied heavy contributions from them, and made himself master of the whole of Tuscany. His power now seemed secure, and his government was at once mild and vigorous; he founded many schools, built towns and harbors, and labored in many ways for the improvement of his kingdom. But this tranquillity was not of long duration. Pope Urban IV. renewed the excommunication against him and his friends, and bestowed his dominions as a papal fief on Charles of Anjou, brother of Louis IX. of France. Manfred, though at first successful in the war which ensued, was at last treacherously defeated and slain in a bloody battle at Benevento. His widow and children were savagely treated by the French, the daughter being confined for 18, and the sons for 31 years. His body was found some days after the battle and was hastily buried with a heap of stones as its monument. Pope Clement IV caused it to be dragged out and buried in uncon-

secrated ground at the frontier of the kingdom, as the body of an excommunicated person.

MANFREDONIA, *mân-frā-dō'nē-â:* city of Italy, province of Foggia, 26 m. n.e. of the city of Foggia, founded by Manfred (q.v.), King of Naples and Sicily, from the ruins of ancient Sipontum. It is strongly walled, and an imposing castle protects its port. In the vicinity of Manfredonia are remarkable salt lakes—the *Pontano Salso* and the *Lago di Salpi*—the beds of which during the summer heats are thickly incrusted with salt. Pop. more than 8,000.

MANFREDO'NIA, GULF OF (*Sinus Urias*): inlet of the Adriatic, which washes the Neapolitan provinces of Bari and Capitanata, 15 m. in length, 30 in breadth.

MANGALORE, *măng-ga-lōr':* seaport in the dist. of Canara, presidency of Madras, lat. 12° 52′ n. In former times the harbor was good, and the town prosperous, but within the present century the harbor has become to a great extent silted up. The cantonment on the n. side of the town is healthful, being elevated, well drained, and open to the breezes from the sea. Pop. (1881) 32,009.

MANGANESE, n. *măn'găn-ēz* [new L. *manganēsĭă*—from L. *magnēs,* the loadstone, so called from its presumed resemblance to the loadstone: OF. and It. *manganese*]: elementary body, forming a metal of a grayish-white color, very hard and difficult to fuse—often applied to the black oxide of the metal forming its peroxide. MANGANESIAN, a. *măn'gă-nē'zhĭ-ăn,* pertaining to or consisting of manganese. MAN'GANE'SIUM, n. *-nē'zhĭ-ŭm,* the chemical term for the metal manganese. MAN'GANE'SIA, n. *-nē'zhĭ-ă,* the oxide of manganesium. MANGANIC, a. *măn-găn'ĭk,* denoting the acid obtained from manganesium. MAN'GANATE, n. *-āt,* a compound of manganic acid with a base. MAN'GANITE, n. *-īt,* the purest and most beautifully crystallized ore of manganese, of a dark steel-gray color, passing into iron black; hydrated sesquioxide of manganese.

MANGANESE [at. wt. = 55.0 (H=1)]: occurs chiefly as pyrolusite, MnO_2, and manganese spar, $MnCO_3$. Other ores, chiefly oxides, are found in smaller quantity. The material is obtained by heating any one of the oxides with aluminum. Alloyed with iron it is largely employed in the steel industry. Manganese resembles iron except that it has a reddish tinge. It rust easily in moist air, liberates hydrogen from dilute acids and is difficult to melt. Manganese forms the following five oxides: (1) *Manganous oxide,* MnO, which is unstable. It yields with acids the ordinary, stable, pink salts of manganese. (2) *Manganic oxide,* Mn_2O_3, forms with acids the unstable *manganic salts,* such as the chloride $MnCl_3$. (3) *Manganese peroxide or dioxide,* MnO_2 (see above). It is largely used in the arts for oxidizing purposes, to render

glass colorless, in the manufacture of chlorine, in the preparation of oxygen, etc. It acts as a feeble *anhydride* (q.v.), and forms *manganites,* such as the calcium salt, $CaMn_2O_5$. The *oxides* Mn_3O_4 and Mn_2O_3 are probably *manganese manganites.* (4) *Manganates,* like the potassium compound K_2MnO_4, which is green, are derived from the *oxide* MnO_3. It is doubtful if this oxide has ever been isolated. The corresponding acid, H_2MnO_4, is known only in solution. It resembles chloric acid and is much used as an oxidizing agent. (5) *Manganese heptoxide* (permanganic anhydride), Mn_2O_4, is a brown, oily, highly unstable liquid. *Permanganic acid,* $HMnO_4$, is an extremely active oxidizing agent. The most important salt is that of potassium, $KMnO_4$, which is largely used as a source of oxygen in the laboratory and in the arts, and as a disinfectant in medicine. It stains the skin brown, but the color can be removed by the application of oxalic acid. This *potassium permanganate* is often employed in quantitative analysis. It forms hard black crystals, which dissolve in water, yielding a magnificent purple solution.

Various preparations of manganese have been employed in medicine. The sulphate of the protoxide, in doses of one or two drachms, produces purgative effects, and is supposed to increase the excretion of bile; and, in small doses, both this salt and the carbonate have been given with the intention of improving the condition of the blood in cases of anæmia. Manganic acid and permanganate of potash are of great use when applied in lotions to foul and fetid ulcers.

MANGANESE BRONZE: a metallic element in which the copper forming the base of the alloy is mixed with a certain proportion of ferro-manganese, and which has exceptional qualities in the way of strength and hardness. Various qualities are manufactured, each suited for certain special purposes. One quality, in which the zinc alloyed with the treated copper is considerably in excess of the tin, is made into rods and plates, and when simply cast is said to have a tensile strength of about 24 tons per square inch. Another quality has all the characteristics of forged steel without any of its defects. Another quality is in extensive use for toothed wheels, gearing, brackets, and all kinds of machinery supports. From its non-liability to corrosion it is largely employed in the manufacture of propellers.

MAN'GANITE: native hydrated oxide of manganese, $MnO(OH)$, or $Mn_2O_3H_2O$. It crystallizes in the orthorhombic system, but also occurs in columnar and stalactitic forms. It is brittle, and has a hardness of 4 and a specific gravity of about 4.3. It is steel gray to iron black in color, and opaque with a submetallic lustre. It occurs in the Harz region, in Norway and Sweden, and in the British Isles. In the United States it is found in the Lake Superior mining district, and in Douglas county,

Colo. It also occurs in Nova Scotia and New Brunswick. Manganite is used as a source of manganese for the preparation of spiegeleisen, and other alloys, and also in the manufacture of pigments and dyes; and also for coloring glass and pottery.

MANGASA'RIAN, Mangasar M.: American author and lecturer: b. Constantinople, Turkey, 1869, Dec. 29. He was educated at Robert College in Constantinople and at Princeton Theological Seminary, New Jersey, and has traveled and lectured widely. At the Grand Opera House, Chicago, he at present lectures weekly to the Independent Religious Society. Among the best known of his writings are: *Omar Khayyam* (1901); *Christian Science, a Comedy in Four Acts* (1903); *The Religion of the Future; The Abysmal Monster* (1903); *European Criticism of America; Morality Without God; The Catholic Church in America; The Rationalism of Shakespeare; What was the Religion of Shakespeare?; Pearls—Brave Thoughts from Brave Minds;* etc.

MANGE, n. *mānj* [F. *mangé*, eaten, fed on; *démanger*, to itch—from *manger*, to gnaw]: the scab or itch in dogs, cattle, etc. Mangy, a. *mān'jĭ*, scabby. Man'giness, n. *-jĭ-nĕs*, quality or condition of being mangy.—*Mange* in horses, dogs, and cattle, and scab in sheep, are diseases very similar to itch in the human subject; resulting from the attacks of minute mites or *acari*, which burrow in the skin, especially if it be dirty or scurfy, cause much irritation, heat, and itching, and the eruption of minute pimples, with dryness, scurfiness, baldness, and bleaching of the skin. The treatment consists in destroying the *acari* and insuring the cleanliness and health of the skin, both of which objects are effected by washing the parts thoroughly every second day with soft soap and water, and dressing daily with sulphur or mild mercurial ointments, or with a solution containing four grains either of corrosive sublimate or arsenic to the ounce of water. Castor-oil seeds, bruised and steeped 12 hours in buttermilk, are very successfully used by native E. Indian farriers. Where the heat and itching are great, as is often the case in dogs, a few drops of tincture of belladonna may be used with the usual dressing, or applied with a little glycerine. Where the general health is deficient, as in chronic cases, the patient should be liberally fed, kept clean and comfortable, have an occasional alterative dose of any simple saline medicine, such as nitre or common salt, and a course of such tonics as iron or arsenic. Cleanliness and occasional washing and brushing maintain the skin in a healthful state, and thus prevent its becoming a suitable nidus for the *acari*.

MAN'GEL-WURZEL, or Man'gold-Wurzel [prob. fr. Ger. *mangold*, beet; *wurzel*, root]: British and N. Amer. name for the varieties of the common Beet (q.v.) cultivated in fields for food of cattle. M.-W. is much larger than the garden varieties of the beet, and coarser in texture.

MANGEL-WURZEL.

It is more nutritious than the turnip and is nearly equal in value to the carrot for feeding to neat cattle. On rich land the M.-W. is immensely productive: 20 to 40 tons per acre have often been raised, and yields of 80 tons have been reported. The lowest yield named is equivalent in feeding value to about five tons of good hay. It will grow in a variety of soils, but thrives best in a rich and moderately dry loam.

The land for this crop should be plowed in the fall, after receiving a heavy coat of manure, and replowed in the spring. The surface soil should be finely pulverized, and as soon as the ground is reasonably warm and dry the seed should be put in with a drill. The surface must then be made compact by the use of a roller. The seed is deposited usually where the plants are to stand. If this is done, four to six lbs. per acre will be required. Rows should be 30 to 36 inches apart, and, in order to facilitate cultivation, should be made as straight as possible. When transplanting is resorted to, the plants are grown in beds, and when they reach suitable size are set in rows about three ft. apart, and the plants 12 to 16 inches apart in the rows. During the period of growth weeds should be kept down by frequent cultivation. Most of this work can be done with the horse-hoe, but the use of hand-hoes and even hand-weeding must be resorted to if necessary. Frequent stirring of the soil is highly beneficial to the plants, aside from its effect in keeping down the weeds, which are natural enemies. If the plants are too thick in the rows they should be thinned when quite small. Most of the surplus ones can be cut out with a hoe. Too much room should not be given, as it tends to the production of roots of enormous size, which are not as desirable for feeding as smaller roots.—The M.-W. should be harvested before heavy frosts. The tops, which are useful for feeding, are to be cut or twisted off about an inch above the crowns. In pulling and handling them, care should be taken not to bruise the roots or break their large fibres, as this would cause their speedy decay. They may be allowed to dry, but must not remain in the sun long enough to wilt. They can then be placed in large piles, with the crowns outward, and covered with straw or leaves; but before freezing weather comes they should be removed to a cool and well-ventilated cellar or buried in well-drained and carefully prepared pits or trenches. Where the M.-W. is grown in large quantities a root cellar in which to store the crop will prove both convenient and economical.

There are several varieties of the M.-W., differing in form and color and to some extent in the proportion of nutritive matter which they contain. Among the standard sorts are the Orange Globe, the Red Globe, the Yellow Ovoid, and a newer and probably much better variety known as the Golden Tankard. The M.-W. may be fed at any time, but gives better results in midwinter and spring, when the ripening process has con-

verted much of its starch into sugar, than it does at an earlier period. The roots can easily be kept in good condition until the first of June. They should be fed sparingly at first, and the quantity gradually increased as the animals become accustomed to them.

MANGER, n. *mān′jėr* [F. *mangeoire*, an eating-place —from *manger*, to eat: L. *manducārĕ*, to chew, to eat]: a fixed feeding-trough for horses and cattle; a sort of trough in ships, to prevent the water that enters the hawse-holes from overflowing the decks.

MANGLE, n. *măng′gl* [Dut. *mangelen*, to mangle, to calender: It. *manganella*, a machine for casting great weights: Ger. *mangel*, a calender, a mangle: Icel. *mondull*, the axis of a wheel]: a machine for smoothing linen: V. to smooth linen with a mangle. MANGLING, imp. *măng′glĭng:* N. the act or business of smoothing linen with a mangle. MANGLED, pp. *măng′gld:* ADJ. smoothed with a mangle.

MANGLE, v. *măng′gl* [Bav. *mangel*, a defect, a bodily injury: mid. L. *mangulārĕ*, to do one an injury: Ger. *mackel;* Dut. *mœckel;* L. *macŭla*, a stain, a blemish: comp. Gael. *meangail*, blemished, deformed]: to cut, hew, or hack with a dull instrument; to lacerate; to tear piecemeal; to hack; to curtail. MANGLING, imp. *măng′glĭng:* N. the act of cutting and slashing. MAN′GLED, pp. *-gld:* ADJ. torn and hacked in cutting. MAN′GLER, n. *-glėr*, one who tears in cutting.

MANGO, n. *măng′gō* [*mangga*, said to be the native Malay name]: very large Asiatic tree and its fruit. The genus Mango (*Mangifera*) is of nat. ord. *Anacardiaceæ*,

Common Mango (*Mangifera indica*).

having flowers with four or five petals, five stamens, of which the greater part are generally sterile, one ovary, seated on a fleshy disk, the fruit a fleshy drupe.—The COMMON M. (*M. indica*) is a native of India; a spreading

tree of rapid growth; 30–40 ft. in height, the stem rising only 8–10 ft. before it divides into branches; the foliage so dense as to be impenetrable to the burning rays of the sun, affording a most grateful shade; the leaves lanceolate, entire, alternate, stalked, smooth, shining, leathery, and about seven or eight inches long, with a sweet, resinous smell. The flowers are small, reddish white or yellowish, in large erect terminal panicles; the fruit is kidney-shaped, smooth, varying considerably in size and color, and containing a large flattened stone, which is covered on the outside with fibrous filaments, longest and most abundant in the inferior varieties, some of which consist chiefly of fibre and juice, while the finer ones have a comparatively solid pulp. The fruit of some of the varieties in cultivation is as large as a man's fist. The M. is much prized for the dessert; it is luscious and sweet, with slight acidity. It was introduced into Jamaica 1782, and is now very generally cultivated in tropical and sub-tropical countries. The unripe fruit is made into tarts and pickles. M. kernels are nutritious, and have been cooked for food in times of scarcity. The tree is raised from seeds; the finer varieties are propagated by layering and inarching, and trees obtained in this way often bear much fruit without attaining large size.—Of several other species of M., natives of different parts of the east, the fruits are inferior.

MAN'GO FISH (*Polynemus paradiseus*): fish which inhabits the Bay of Bengal, and ascends the Ganges and other rivers to a considerable distance; accounted one of the most delicious fishes of India, particularly when salted and prepared in a peculiar manner, when it bears the name of *Burtah*. The name M. is given to this fish from its beautiful yellow color, resembling that of a ripe mango; or, as some say, because of its appearance at about the time for ripening of mangoes. Another name is *Tupsee*. It is of perch-like form, and belongs to a genus formerly referred to the Perches (*Percidæ*), now the type of a distinct family of Acanthopterous Teleosteans (*Polynemidæ*), having the ventral fins behind the pectorals, though partially attached to the bones of the shoulder, and the lower rays of the pectorals extended into threads, which in the mango fishes are twice the length of the body. The M. is seldom more than eight or nine inches in length. The genus *Polynemus* contains a number of species of tropical fishes, the air-bladders of some of which are of importance as isinglass: those of *P. indicus*, a fish sometimes 20 lbs. weight, and other species, forming a considerable article of export from Singapore, under the name *Fish-maws*.

MANGOLD: see MANGEL-WURZEL.

MANGONEL, n. *măng'gō-nĕl'*, or MANGON [OF. *mangonel*, a sort of sling or engine—from mid. L. *mangonel'lus*, dim. of *mangona*, a war-engine]: in *OE.*, a war-engine for throwing stones: see BALISTA.

MANGOSTEEN, n. *măng'gō-stēn*, or MAN'GOSTAN, n. *-stăn* [Mal. *mangusta*]: a tree (*Garcinia mangostana*), and its fruit, one of the most delicious of all fruits. The tree is of nat. ord. *Guttiferæ* or *Clusiaceæ;* native of the Molucca Islands; usually only about 20 ft. high, but of beautiful appearance, having an erect, tapering stem and a regular form, somewhat like that of a fir; the leaves 7 or 8 inches long, oval, entire, leathery, and shining; the flowers large, with corolla of four deep-red petals. The fruit, in size and shape, resembles an orange; it is dark brown, spotted with yellow or gray, has a thick rind, and is divided internally by thin partitions into cells. The pulp is soft and juicy, of a rose color, refrigerant and slightly laxative, with a mixture of sweetness and acidity, and an extremely delicate flavor. It may be eaten very freely with entire safety, and is esteemed very beneficial in fevers.

MANGOUSTE, *măn-gôst':* carnivorous digitigrade quadruped. See ICHNEUMON.

MANGROVE, n. *măn'grōv* [a corruption of Mal. *mangle,* and Eng. *grove*], (*Rhizophora*): genus of plants of nat. ord. *Rhizophoraceæ.* This order consists of trees and shrubs, all tropical and natives of coasts, particularly about the mouths of rivers, where they grow in the mud, and form a close thicket down to and within the marge of the sea, even to low-water mark. Most of the species send down roots from their branches, and thus rapidly extend over large spaces, forming secure retreats for multitudes of aquatic birds, while crabs are found in vast numbers among the water-washed branches, and shell-fish are attached to them. The order is distinguished by simple, opposite leaves, with convolute, deciduous stipules between the leaf-stalks; the ovary 2-4 celled, each cell containing two or more ovules; the fruit not opening when ripe, crowned with the calyx, 1-celled, 1-seeded. The seeds have the peculiarity of germinating while still attached to the parent branch, a long, thick radicle proceeding from the seed, piercing its covering, and extending rapidly downward, till the fruit falls off, when it is soon imbedded in the mud, into which its club-like form enables it to penetrate. The whole number of species known is only about 20. The fruit of the common mangrove (*Rhizophora mangle*) is sweet, eatable; and its juice, when fermented, yields a light wine. The bark of the common mangrove is sometimes exported for tanning.

MANGROVE SNAPPER: the gray snapper, an excellcellent food-fish, which abounds among the mangroves along the coasts of Florida and the Bahamas, and thence to Brazil. See SNAPPER.

MANGUANGAS, *mân-gwân'gâs:* a collective name for a number of heathen tribes living in the forests of the island of Mindanao, Philippines. They are of the Malay race. See PHILIPPINE ISLANDS.

MANGUIANES, *mân-gē-ânz':* the natives of the interior of Mindoro, Romblon and Tablas, Philippines; they are divided into four branches, one of which is of Negrito blood, another is Mongoloid, and the other two are of the Malayan race. There are several tribes, including the Bangot, the Buquil, etc. The term is also used in the island of Palawan to designate all wild natives of unknown origin.

MANGUM, *măng'gŭm*, WILLIE PERSON: American legislator: b. Orange county, N. C., 1792; d. Red Mountain, N. C., 1861, Sept. 14. He was graduated from the University of North Carolina in 1815, was admitted to the bar in 1817, in 1818 was a member from Orange county of the lower house of the state legislature, and in 1819 became a judge of the superior court. From 1823, Dec. 1, to 1826, March 18, he was a whig representative in the 18th and 19th congresses; but this post he resigned, and again he was elected a judge of the superior court. He retired from the court in 1826, but filled the office a third time in 1828-30. He was a United States senator from 1831, Dec. 5, to 1836, when he resigned, and from 1840, Dec. 9, to 1853, March 3, and in 1842-5 was president *pro tempore* of the senate. Throughout nearly his entire term of service in congress he was a leader of the whigs; and in 1837 he received the 11 electoral votes from South Carolina for the presidency of the United States.

MANHATTAN: Kan., city, county-seat of Riley county; on the Kansas river, at the junction of the Big Blue, and on the Chicago, R. I. & P. and the Union P. railroads; about 55 miles west of Topeka. The surrounding region is mainly agricultural; limestone quarries are in the vicinity. The chief industrial establishments are a foundry, machine shops, flour mills, lumber and brick yards. Manhattan is the trade centre for a large section and ships live-stock, grain, and limestone. The city owns and operates the waterworks. Pop. (1910) 5,722.

MANHATTAN COLLEGE: an institution in Manhattan borough of New York city directed by the Christian Brothers. It was opened originally (1849) as an academy for young men, under the name of the Academy of the Holy Name, but the constant increase of the student body and the consequent demand for higher branches of study forced the academy to adopt the college courses, which was done in 1853, the academy being then incorporated under the name of Manhattan College. The courses lead to the degrees of B.A., M.A., B.S., and C.E. The resources of the college are derived from tuition only, there being no endowment. The institution reported at the end of 1907: professors and instructors, 16; students, 235; volumes in library, 11,250.

MANHAT'TAN ISLAND: island on which the greater part of the city of New York stands. See NEW YORK.

MANI, *mā′nē*, or MANES, *mā′nēz*, or frequently MANICHÆUS, *măn-ĭ-kē′ŭs* (entitled *Zendik*, Sadducee): founder of the heretical sect of the Manicheans (q.v.): b. (according to the Mohammedan tradition, which is the most probable) 215 or 6; d. 276 or 7. Little is known of his early life; and the accounts transmitted through two distinct sources—the Western or Greek, and the Eastern, or Mohammedan—are legendary and contradictory on almost every important point. The very dubious Greek tradition records him to have been bought as a slave, at the age of seven years, by a woman of Babylonia, who gave him a good education, and at her death made him sole heir. Among her books he is said to have found the writings of Scythianus, given her by one of the latter's disciples. The more probable Eastern tradition shows him of a high Persian family of Ecbatana, carefully educated by his father, who in later years was of the sect known as 'Baptists' in s. Babylonia. Mani was brought up in their doctrines, which had probably some connection with those of the Elcesaites (q.v.) and certainly with those of the Christians of St. John (q.v.). Both the traditions present him in Persia at the age of 25 or 30 preaching a new religion, or a fantastic philosophy of nature, compounded of elements drawn from various systems, Jewish, Buddhist, Magian, Christian. He claimed at the Persian court that he was the last and mightiest prophet whose advent had been prophesied from old time, the very 'Paraclete' whom Jesus had promised. Mani remained in Persia till his 60th year, and changed his former name to obliterate all traces of his origin. Persecuted by King Sapor I. of Persia, he sought refuge in foreign countries, and went as a missionary preaching his new doctrines in India, China, and Turkestan. In Turkestan he lived in a cave twelve months, during which he is said to have been in heaven. He reappeared with a wonderful book of drawings and pictures, called Erdshenk or Ertenki-Mani. After the death of Sapor (272), he returned to Persia, where Hormuz, the new king, who was well inclined toward him, received him with great honor, and to protect him more effectually against the persecutions of the Magi, gave him the stronghold of Deshereh, in Susiana, as a residence. After the death of this king, however, Behram, his successor, entrapped Mani into a public disputation with the Magi, for which purpose he had to leave his castle; and he was seized, flayed alive, and hung before Djondishapur. For his doctrine, etc., see MANICHEAN.

MANIA, n. *mā′nĭ-ă* [Gr. *manĭă*, madness: It. and Sp. *mania:* F. *manie*]: kind of delirium in which both the judgment and memory are impaired; a kind of madness often having much of wild and boisterous excitement. MANIAC, n. *mā′nĭ-ăk*, a madman; one raving with madness. MANIACAL, a. *mă-nī′ă-kl*, affected with madness. MANI′ACALLY, ad. *-ă-kăl-lĭ*. MA′NIA-A-POTU, n. *-â-pō′tū*,

madness from drinking; delirium tremens (q.v.). *Note.*—MANIA is also used with reference to anything which happens to be in powerful possession of the public mind.—SYN. of 'mania': madness; insanity; lunacy; frenzy; derangement; alienation; delirium; monomania; dementia; dipsomania; kleptomania; bibliomania; hypochondria; delirium tremens (see these titles).

MA'NIA: the form of mental derangement most familiar to ordinary observers. The excitement and violence by which it is sometimes characterized have become, erroneously and unfortunately, the type and standard by which the disease and persons subject to it have been recognized and treated. These qualities occasionally involved danger to those around, and were always calculated to inspire fear; so that for centuries they were counteracted by repression, coercion and harshness. It is worthy of remark that contemporaneously with the establishment of confidence, and with the introduction of a humane system of treatment, the fury and formidable pugnacity of the insane to a great degree disappeared. (See INSANITY.) The discontinuance of restraint, and the cessation of necessity for it in asylums, whether regarded as protective or remedial, may be accepted as proof of the reality and extent of this change, whatever may be its cause. It is, moreover, probable that, by the accuracy of modern diagnosis, cases of wild frenzy, depending on fever or inflammation of the brain, have been distinguished from those of true mania, and its true features thus better determined. These are loss of appetite, general uneasiness and irritation, watchfulness, headache, restlessness, intense stimulation of the passions and propensities, rapid ideation, incoherence and loquacity, violence or unbridled agitation and extravagance; and, as the disease advances, emaciation, hollowness of the cheeks and eyes, discoloration of the skin, brilliancy and fixity of eyes. When the affection has become chronic, delusions, previously existing, become prominent, and impart a predominating complexion to the condition. It is probable that, wherever delusions or hallucinations are detected, though they may seem solitary deviations from health, there is a broader and deeper substratum of disease, of which they are trivial manifestations; and where mania has ushered in such affections the original disease may be held to remain while they remain, and to be reacted upon, and, under certain circumstances, roused into activity through their instrumentality. In these views may be found an explanation of those partial mental derangements which appear to coexist with health.

MANICATE, a. *măn'ĭ-kāt* [L. *manĭcātus*, furnished with long sleeves—from *manĭca*, a long sleeve]: in *bot.*, applied to pubescence which is so much matted and interwoven that it may be easily removed from a surface in one mass.

MANICHEAN, a. *măn-ĭ-kē′ăn:* pertaining to *Mani* (q.v.), a Persian, or to his doctrine. MAN′ICHEAN, or MAN′ICHEE, n. *-kē*, or MAN′ICHE′IST, n. *-kē′ĭst*, follower of *Mani*. MAN′ICHE′ISM, n. *-kē′ĭzm*, system of fantastic philosophical doctrines, invented and taught in the 3rd c. as a religion by Mani, or Manes, or Manichæus: see MANI. Though the Manicheans utterly disclaimed the name Christian, yet they have commonly been reckoned among the heretical sects of the church. It was intended to blend the chief dogmas of Parsism, or rather Magism, as reformed by Zoroaster, with a certain number of Buddhistic views, under the outward garb of Biblical, especially New Testament history, which, explained allegorically and symbolically, was made to represent an entirely new religious system, and one utterly contradictory to Christianity and its fundamental teachings. 'At the close of the 3d c. three great religious systems stood opposed to one another in w. Asia and the s. of Europe; these were Neo-Platonism, Catholicism, and Manicheism. All three may be described as the final results reached, after a history of more than a thousand years, by the religious development of the civilized nations stretching from Persia to Italy. . . . . Each had appropriated elements of older and widely different religions. . . . . Neo-Platonism was the spiritualized religion of nature, Greek polytheism transfigured and developed into Pantheism through Oriental influences and philosophical speculations; Catholicism was the monotheistic universal religion, based on the Old Testament and the Gospel, but built up with the resources of Hellenic speculation and ethics; Manichæism was the dualistic and universal religion, founded on Chaldaism, but charged with Christian, Parsic, and perhaps Buddhistic ideas.' (Prof. Adolph Harnack, *Enc. Brit.*, 9th ed.)—Manicheans assumed, above all, two chief principles, whence had sprung all visible and invisible creation, and which—totally antagonistic in their natures—were respectively styled the Light, the Good, or God, and the Darkness, the Bad, Matter, or Archon. They each inhabited a region akin to their natures, and excluding each other to such a degree that the region of Darkness and its leader never knew of the existence of that of the Light. Twelve æons —corresponding to the 12 signs of the zodiac and the 12 stages of the world—had sprung (emanated) from the Primeval Light; while 'Darkness,' filled with the eternal fire, which burned but shone not, was peopled by 'demons,' who were constantly fighting among themselves. In one of these contests, pressing toward the outer edge of their region, they became aware of the neighboring region, and forthwith united, attacked it, and succeeded in carrying captive the Ray of Light that was sent against them at the head of the hosts of Light, and which was the embodiment of the Ideal or Primeval Man (Christ). A stronger æon, however (the Holy Ghost), hurried to the rescue, and redeemed the greater

and better part of the captive Light (Jesus Impatibilis) The smaller and fainter portion, however (Jesus Passibilis), remained in the hands of the powers of Darkness; and out of this they formed, after the ideal of *The Man of Light*, mortal man. But even the small fraction of light left in him (broken in two souls) would have prevailed against them, had they not found means to further divide and subdivide it by the propagation of this man (Eve—Sin). Not yet satisfied, they still more dimmed it by burying it under dark 'forms of belief and faith, such as Paganism and Judaism.' Once more, however, the Original Light came to save the light buried in man, in the person of Christ, descending from the sun, with which he is one. The demons succeeded, however, in cutting his career of salvation short by seducing man to crucify him. His sufferings and death were, naturally, only fictitious, since he could not in reality die; he only allowed himself to become an example of endurance and passive pain for his own, the souls of light. Since, however, even his immediate adherents, the apostles, were not strong enough to suffer as he had bid them, he promised them a Paraclete, who should complete his own work. This Paraclete was Mani, who surrounded himself, like Christ, with 12 apostles and sent them into the world to teach and to preach his doctrine of salvation. The end of the 'world' will be fire, in which the region of Darkness will be consumed and utterly annihilated. To attain to the region of eternal light, it is necessary that Passion, or rather the Body, should be utterly subdued; hence rigorous abstinence from all sensual pleasures—asceticism to the utmost degree—is to be exercised. The believers are divided into two classes—the Elect and the Auditors. The Elect have to adhere to the *Signaculum Oris*, *Manus*, and *Sinus*, that is, they have to take the oath of abstinence from evil and profane speech (including 'religious terms such as Christians use respecting the Godhead and religion'), further, from flesh, eggs, milk, fish, wine and all intoxicating drinks (cf. Manu, *Instit.* vv. 51, 52, 53: 'He who makes the flesh of an animal his food . . . . not a mortal exists more sinful . . . he who . . . desires to enlarge his own flesh with the flesh of another creature,' etc.); further, from the possession of riches, or, indeed, any property whatsoever; from hurting any being—animal or vegetable; from heeding their own family, or showing any pity to him who is not of the Manichean creed; and, finally, from breaking their chastity by marriage or otherwise. The Auditors were comparatively free to partake of the good things of this world, but they had to provide for the subsistence of the Elect, and their highest aim also was the attainment of the state of their superior brethren. In this Manichean worship, the Visible Representatives of the Light (sun and moon) were revered, but only as representatives of the Ideal, of the Good or supreme God. Neither altar nor sacrifice was to be found in their places of religious

assemblies, nor did they erect sumptuous temples. Fasts, prayers, occasional readings in the supposed writings of Mani, chiefly a certain *Fundamental Epistle*, were all their outer worship. The Old Testament they rejected unconditionally; of the New Testament, they retained certain portions, revised and redacted by the Paraclete. (August. c. Faust., book xviii.; cf. book ix.). Sunday, as the day on which the visible universe was to be consumed, the day consecrated to the sun, was kept as a great festival; and the most solemn day in their year was the anniversary of the death of Mani. Baptism and the Lord's Supper were celebrated as mysteries of the Elect. Of this mode of celebration, however, we know almost nothing; even Augustine, who, for about nine years, belonged to the sect, and who is our chief authority on this subject, confesses his ignorance of it. As to the general morality of the Manicheans, we are equally left to conjecture; but their doctrine certainly appears to have had a tendency, chiefly in the case of the uneducated, to lead to a sensual fanaticism hurtful to a pure mode of life.

The outward history of the sect is one of almost continuous persecution from 296; yet their adherents were numerous; and many mediæval sects, Priscillians, Katharenes, Josephinians, etc., were suspected to be secretly Manicheans. The sect did not disappear entirely until the time of the Reformation.

MANICHORD, n. *măn'ĭ-kawrd* [L. *mănus*, the hand, and Eng. *chord*]: a musical stringed instr. whose strings were covered with little pieces of cloth to soften or subdue the sounds.

MANICURE, n. *măn'ĭ-kūr:* one whose business is the care and treatment of the hands, especially the finger-nails. V. to take care of or treat hands and nails.

MANIFEST, a. *măn'i-fĕst* [F. *manifeste*—from L. *manifes'tus*, clear, plain—from *mănus*, the hand, and obsolete *festus* or *fendtus*, struck: It. *manifesto*]: clear; evident; plain; apparent: N. an invoice of a cargo of goods for examination at the custom-house: V. to show plainly; to reveal or declare. MAN'IFESTING, imp. MAN'IFESTED, pp. MAN'IFES'TABLE, or MAN'IFES'TIBLE, a. *-tĭ-bl*, that may be manifested. MANIFESTA'TION, n. *-tā'shŭn*, the act of disclosing what is secret or obscure; clear evidence. MAN'IFESTLY, ad. *-tĭ*, clearly; plainly. MANIFESTO, n. *măn'ĭ-fĕs'tō* [It. *manifesto*, public declaration of a prince or state]: public written declaration issued by a sovereign prince or by a government on some state emergency, expressive of intentions, opinions, or motives. Immediately before entering on a war, a manifesto is issued containing a statement of the reasons which have been held to justify the sovereign or government in taking up arms. In case of a revolt, a manifesto is sometimes issued to recall subjects to their allegiance.—SYN. of 'manifest, a.': open; visible; conspicuous; obvious;—of 'manifest, v.': to show; declare; exhibit;

Before the revolution of 1848, M. was again incarcerated; but on receipt of the news that Paris, Naples, and Tuscany had revolted, he was released by the populace, and invested with supreme power. The organization of a civic guard, and the expulsion of the Austrians from the arsenal, were M.'s first public measures. From the period of his election M.'s energies were devoted to the organization of the inhabitants for self-defense. During the annexation of Lombardy to Piedmont, M. laid down his authority; but on the defeat of the Sardinian army at Novara, 1849, Mar. 23, he resumed it, and was the animating spirit of Venice during the heroic defense of the city for four months against the Austrian army. Aug. 24, Venice capitulated; but M., with 40 of the principal citizens, being excluded from all stipulations, quitted the city. He retired to Paris, where he taught his native language, declining innumerable offers of aid, and where he died of heart-disease.

MAN'IOC, or MAN'DIOC, or CASSA'VA (*Manihot utilissima*, formerly known as *Jatropha manihot*, and as *Janipha manihot*): large, half-shrubby plant of nat. ord. *Euphorbiaceæ*, native of tropical America, and much cultivated there. It is now also extensively cultivated in Africa, and has been introduced into other tropical countries. M., or *Mandioca*, is the Brazilian name; *Cassava*, the W. Indian; and in Peru and some other parts of S. America, the name is *Juca* or *Yucca*. The plant grows in bushy form, with stems usually 6–8 ft. high, sometimes much more. The stems are white, brittle, and have a very large pith; the branches are crooked. The leaves are near the extremities of the branches, large, deeply 7-parted. The roots are very large, turnip-like, sometimes weighing 30 lbs., from three to eight growing in a cluster, usually 12 to 24 inches long. In common with other parts of the plant, they contain an acrid milky juice, so poisonous as to cause death in a few minutes; but as this is owing to the presence of hydrocyanic acid, which is quickly dissipated by heat, the juice, inspissated by boiling, forms the excellent sauce called CASAREEP (q.v.); and fermented with molasses, it yields an intoxicating beverage called *Ouycou;* while the root, grated, dried on hot metal-plates, and roughly powdered, becomes an article of food, very largely used in S. America, and there very generally known as *Farinah* (Portug. meal). It is made into thin cakes, which are formed, however, not by mixing it with water, but by the action of heat softening and agglutinating the particles of starch. These cakes are sometimes called *Cassava* or *Cassada Bread.* It is also exported to some European countries for use in manufactories as starch. The true starch of M., separated in the ordinary manner from the fibre, also is exported in considerable quantity, under the name *Brazilian arrow-root;* and from it Tapioca is made, by heating it on hot plates, and stirring with an iron rod; the starch-grains burst, some of the starch is converted into dextrine, and the whole agglomerates into small irregular masses.—Another species or variety

of M. also is cultivated, the roots of which contain a perfectly bland juice, and are eaten raw, roasted, or boiled. This, the SWEET CASSAVA or SWEET JUCA (*M. Aipi* of some botanists, said to be a native of Africa as well as of America), is described as having the leaves 5-parted, and the root of longer shape than the common or bitter cassava, and much smaller; only about six ounces in weight (other accounts make it as large).—The M. is easily propagated by cuttings of the stem, and is of rapid growth, attaining maturity in six months. The produce is at least six times that of wheat.

MANIPLE, n. *măn'i-pl* [L. *manip'ŭlus*, a handful, a company of soldiers—from *mănus*, the hand; *plĕō*, I fill: It. *manipolo:* F. *manipule*]: in *anc. Rome*, a small band of soldiers; an ornament like a scarf worn about the left arm of a priest at mass. MANIPULAR, a. *mă-nĭp'ū'lėr*, pertaining to the maniple, or to the hand.

MANIPULATE, v. *mă-nĭp'ū'lāt* [mid. L. *manipŭlātus*, led by the hand—from L. *mănus*, the hand; *plĕō*, I fill]: to treat, operate, or work by means of the hand; to manage for some desired end, generally in an ill sense. MANIP'ULATING, imp. MANIP'ULATED, pp. MANIP'ULA'TION, n. *-lā'shŭn*, work by hand; manual operation or treatment, particularly in an artistic or skilful manner. MANIP'ULATIVE, a. *-lā-tĭv*, pertaining to or done by the hand. MANIP'ULATOR, n. *-lā-tėr*, one who manipulates. MANIP'ULA'TORY, a. *-lā'tėr-ĭ*, of or pertaining to manipulation.

MANIPUR': see CASSAY.

MANIS, *mā'nĭs:* genus of mammalia, of ord. *Edentata*, containing several species, natives of Africa and the warm parts of Asia, and in their habits and many of their characters closely resembling the Ant-eaters (q.v.) of S. America; but having, among other differences, the body and the tail covered with an armor of large sharp-edged and pointed scales. The species are numerous. One, remarkable for the length of its tail, the *Phattagen* of the ancients (*M. tetradactyla*), inhabits western Africa. It is about five ft. in length, of which the tail occupies three ft.—Another, the SHORT-TAILED M. (*M. pentadactyla*), is common in many parts of the E. Indies: see PANGOLIN.

MANISA, *mâ-nē'sâ*, or MANISSA, *mâ-nĭs'sâ* (ancient *Magnesia ad Sipylum*): town of Asia Minor, on the s. bank of the Sarabat (*Hermus*), 28 m. n.e. of Smyrna. It abounds in handsome public buildings. Silk and cotton manufactures are carried on. The anc. Lydian Magnesia is famous for the victory of the Romans under Scipio over Antiochus III. of Syria. Pop. stated variously 35,000 to 60,000.—For another Magnesia in anc. times, not far from this one, see MAGNESIA *ad Mæandrum.*

MANISTEE, *măn-ĭs-tē':* city, cap. of Manistee co., Mich.; on Manistee river and Lakes Michigan and Manistee, and a branch of the Flint and Père Marquette railroad; 25 m. n. by e. of Luddington, 72 m. n. of Muskegon, 135 m. n.w. of Lansing. It is in the famous fruit

and peach belt of Mich.; is built on both sides the river; has 20 steam saw, shingle, and planing mills on Lake Manistee, and foundries, machine-shops, and tanneries; contains court-house, churches, bank, high school, public hall, and several newspapers; and ships annually 200,000,000 ft. of lumber and a vast quantity of shingles, lath, pickets, and bark. Pop. (1910) 12,381.

MANITOBA, *măn-ĭ-tō'ba* or *măn-ĭ-tō-bâ'* or RED RIVER SETTLEMENT, or SELKIRK SETTLEMENT: the central province of the Dominion of Canada, lying between long. 95°-101½° w., and lat. 49°-52° 30′ n.; elevation varying from 760 to 1,500 ft. above the sea; area 73,732 sq. m., water surface contained in its inland fresh water lakes about 9,900 sq. m. Pop. (1871) 25,228; (1881) 62,260; (1891) 152,506; (1901) 254,947. The capital is Winnipeg (q. v.), pop. (1901) 42,340; (1907) about 85,000; and other cities are Brandon, pop. (1901) 5,620; and Portage La Prairie 3,901. The chief railway systems are the Canadian Pacific, the Grand Trunk Pacific and the Canadian Northern with their branch lines. J. J. Hill has bought a right of way into the heart of Wpg. for another road.

Topography, Rivers, Lakes, Etc.—In the e. the geological formation consists of Laurentian rocks, devoid of soil. About 80 m. from the eastern boundary the terrane of the Red River and Assiniboin valleys begins, varying in width from 60 to 170 m. Silurian and Devonian limestone deposits underlie this region. The Red River Valley is a level plain or prairie, with a very fertile soil. It consists of rich black mold 2 to 4 ft. thick. In places the ground has been cropped for 50 years without apparent diminution of fertility. The surface was generally treeless, though a few miles eastward the country was wooded. Still further westward rises a second prairie steppe, at an elevation of from 100 to 150 ft., Tiger Hills, Duck Mountain, Pembina Mountain, and Riding Mountain forming its eastern escarpment. Cretaceous rocks, consisting largely of sandstone and shale, underlie this plane. Beds of drift, or soil from 60 to 200 ft. in thickness, cover the Cretaceous, Silurian and Devonian rocks and this drift, which begins at the underlying rocks and comprises principally boulders, boulder clay, marl clay and a rich deposit of humus two to four ft. thick on the surface, has been deposited chiefly in the post-glacial lakes, Souris, Saskatchewan and Agassiz. The upper layer is rich with phosphates and nitrogenous components. The rocks of M. contain deposits of limestone, iron, cement and gypsum. The principal rivers are the Red, Assiniboin, and Winnipeg, and the largest lakes Winnipeg, Dauphin, Manitoba, and Winnipegosis.

Flora, Fauna and Climate.—The trees cover considerable areas along the river and lake banks and on protected elevations, the elm, cedar, oak, spruce, poplar, balsam, tamarack and cottonwood being most numerous. Wild grapes are plentiful and the strawberry, raspberry, cranberry, huckleberry, plum and cherry are at times raised.

MANITOBA.
SCALE OF STATUTE MILES.
0 5 10 20 30 40 50 60
Copyright, 1904, by Rand McNally & Co.
KEEWATIN
ONTARIO
UNITED STATES
ASSINIBOIA
MANITOBA
LAKE WINNIPEG
LAKE MANITOBA
WINNIPEGOSIS
DAUPHIN LAKE
DUCK MTS.
RIDING MT.
TURTLE MTS.
LAKE OF THE WOODS
WINNIPEG
St. Boniface
Brandon
Portage la Prairie
Selkirk
Emerson
Morden
Dauphin
Swan River
Winnipegosis
Minnedosa
Neepawa
Virden
Souris
Deloraine
Killarney
Boissevain
Melita
Carman
Gimli
Assiniboine
Whitemouth
Red Deer Pt.
Fisher Bay
Icelandic River
Shoal Lake
Swan Lake
Dog Lake
Hairy Lake
St. Martins Lake
Pelican Lake
Rock Lake
Whitemouth Lake
Snowshoe Lake
Pigeon R.
Blood Vein R.
Bad Throat R.
Hole River
War Path R.
Fisher R.
Washaw R.
Askandaga River
Pembina
Roseau River
Cypress River
IND. RES.
CANADIAN PACIFIC
CANADIAN NORTHERN
100°
50°
A B C D E
1 2 3
R., MCN. & CO., ENGRS. CHI.

Moose, deer, elk, antelope, prairie wolf, fox, rabbit and Arctic hare furnish sport for the hunter of wild game, while the bird life of the province consists of a large variety of insectivorous and carnivorous birds, and partridge, snipe, duck, wild goose, crane, prairie chicken, swan, pelican, etc. Whereas buffalo once roamed the prairies in large numbers, they are now extinct with the exception of privately-owned herds. The winter climate is less severe than in the more southerly portions of the Red River valley, and though occasionally the mercury drops to 40° below zero, the air is dry and pleasant. The summer months are warm and though the days are long, the nights are invariably cool.

Industries and Manufactures.—Agriculture is the chief pursuit. The estimated acreage of arable lands in the province is 30,000,000, of which less than 5,000,000 are cultivated. Wheat is grown on the greatest scale in western Manitoba; oats, corn, barley, hops, flax, potatoes and other root crops grow well. The vegetable crops are abundant and timothy is being extensively cultivated. According to the latest statistics the value of agricultural lands is $93,233,535; buildings $20,049,726; implements and machinery $12,169,619; live stock, including also poultry and bees, $25,902,201; and the total value of agricultural products including field crops, nursery stock and live stock sold, meats, dairy products, wool, and eggs, was $24,448,237. In 1905 the largest crops were as follows: wheat 55,761,416 bu.; oats 45,484,025 bu.; barley 14,064,176 bu.; flax 326,964 bu.; rye 173,075 bu.; peas 53,706 bu.; potatoes 4,759,646 bu.; roots 3,481,651 bu. The production of butter was 4,160,956 lbs., valued at $769,591.15, and of cheese was 1,201,382 lbs., valued at $127,346.49. The value of the fishery products is about $400,000 annually and of the forest and fur products about $1,000,000. According to the census of 1901 the capital invested in the manufacturing industries of the province is $7,539,691; salaries and wages aggregated $2,419,549; the miscellaneous expenses were $820,620; the cost of materials used amounted to $7,955,504; and the value of the products was $12,927,439.

Banking and Finance.—There is one bank—the Northern Bank—of a strictly local character with a paid up capital of $1,129,592, deposits of $3,452,600, total assets of $6,270,486 and total liabilities of $5,090,400. Branches of most of the leading Canadian banks are also to be found in Wpg. The construction of the Canadian Pacific railway through Manitoba has aided largely in the rapidity of its development. The phenomenal "boom" of 1879 and 1880, which tied up thousands of dollars of the business men, not only of Manitoba, but also of the eastern provinces, in fantastic land schemes and in non-existent prairie villages, was followed by the inevitable crash but since that time there has been a slow, steady and solid and substantial growth in all financial lines. During the year ending 1904; Dec. 31 the provincial receipts were $2,029,-

768, as follows: consolidated revenue, $1,486,667, including Dominion subsidy of $579,061, open ledger accounts $146,004, and as trust money $397,096. The expenditures were $1,875,358, including consolidated revenue $1,271,732, open ledger accounts $186,711, education $247,231, public improvements $272,275, etc. In 1905 the debenture debt of the province was $5,288,859 and the province guarantees amounted to $15,587,325, of which over $14,000,000 was the guarantee of Canadian Northern railway bonds. The assets amounted to over $20,000,000.

Religion.—There is no state religion. Of the religious denominations the strongest is the Presbyterian, in 1901 having 65,348 members; next in order follow the Methodists with 49,936, the Roman Catholic with 35,672, Lutheran with 16,542, and Baptists 9,166. Other denominations aggregate 33,625 members, including the Church of England with 10,175 members.

Education.—Public education is undenominational, though religious instruction is allowed with the parents' permission. The Dominion government has set apart two sections of land of one square mile each in every surveyed township for the support of public school education and as fast as settlement progresses, schools are established. In 1905 there were 1,669 schools in the province, 2,213 teachers, the number of pupils was 58,547 and the average daily attendance 31,326. A new Provincial normal school has just been built at Wpg. Normal schools are also conducted at Brandon, Portage la Prairie, and Manitou. The public school systems of Winnipeg, Brandon, and Portage La Prairie have collegiate institutes for higher education connected with them. High schools have also been opened at about a dozen outside points. The University of Manitoba is at the head of the educational system of the province and affiliated with it are St. John College (Episcopalian), Manitoba (Presbyterian), Wesley (Methodist) and the College of St. Boniface (Roman Catholic), and also the colleges of Medicine and Pharmacy. A fine Agricultural College has been built and just opened at Winnipeg.

In recent years non-sectarianism in the M. schools occupied the public mind, and an agitation in favor of separate schools for Rom. Catholics and Protestants was begun. Formerly (in 1871, shortly after the admission of the province to the Dominion) a system of denominational education was established in the public schools by act of the legislature. The Protestant population was divided into 12 school districts (in other words 12 electoral districts which comprised in the main a Protestant population) and placed under the management of the Protestant members of the Board of Education. Similarly 12 electoral districts, peopled mostly by Catholics, were constituted 12 school districts under the Catholic members of the Board of Education. Each school division raised the amount necessary for support and in addition received its allotment of public funds. In 1890, however, the

Jesuits' Estates agitation in the east aroused sectarian feeling and the movement against separate schools was begun. A public school system was then established by act of the legislature, the old management of two Boards abolished, and all school taxes from Protestants and Catholics alike appropriated to the support of the new system.

The Catholics resented this action and finally carried the case to the courts but in July, 1892, after the Court of Queen's Bench in Manitoba had sustained its validity and upon appeal the Supreme Court of Canada had decided against it, the Judicial Committee of the Imperial Privy Council (the highest British Court of Appeal) upheld the Manitoba Court and reversed the decision of the Canadian Supreme Court. The Catholics then appealed to the Governor-general, who, after hearing their appeal in February and March, 1895, issued the Remedial Order of 1895, March 19. This order required the province to restore to Catholics the right to build, maintain and conduct Roman Catholic schools as before, the right to share the school funds, proportionately, and the right of exemption from taxation in support of other schools than Catholic, providing, of course, that they did support their own. The Manitoba legislature refused to act and a special session of Parliament was called in 1896, January. Though the speech from the throne, in the legislature (1896, Feb. 6), declared that the results of the election showed that the people were opposed to separate schools, on the 11th a bill for the restoration of the separate school system was introduced in the Canadian House of Commons. On Feb. 27th the M. legislature protested against Dominion interference in M. school affairs, and on April 15 the Canadian govt. withdrew the measure after its second reading.

Sir Charles Tupper was beaten in the succeeding general elections and Sir Wilfred Laurier, the new Liberal Premier, compromised the question in 1897 as follows: religious teaching to be permitted between 3:30 and 4:00 P. M. in the schools, provided the sanction of the majority of the trustees of the district be obtained or if asked for by petition of the parents or guardians of at least 10 children attending a rural school or 25 attending an urban school, such teaching to be conducted by any Christian clergyman of the district or person duly authorized by him. Where, however, the attendance of Roman Catholic children in rural schools is 25 or upwards and in urban schools 45 or upwards, one duly certified Roman Catholic teacher may be employed upon petition of the trustees.

Government.—The government consists of a lieut. gov., appointed for five years by the Dominion govt., an executive council of five ministers of the crown, and a legislative assembly of 40 members chosen every four years by popular vote. From 1870 to 1876 there was also a legislative council of seven members and the legislative assembly con-

sisted of 24 members but in the latter year the council was abolished and the number of members in the assembly raised to 40. The province is represented in the Dominion Parliament by four senators appointed for life by the governor-general-in-council, and by 10 members in the House of Commons, elected by popular vote.

History.—The Red River settlement, of which M. is now the chief part, was a colony established in a tract north of Minnesota, along the Red River of the North. In 1811 the Earl of Selkirk, member of the Hudson's Bay Company with a controlling interest in its stock—£44,000 out of £100,000—attracted by the fertility of the soil of this tract, obtained from the company a grant of 116,000 square miles of country on both banks of the river, extending some distance within the present frontier of the United States. This grant was given on the condition that he would establish a colony and furnish the company with laborers as required, and to comply with the conditions next year he brought out a number of settlers from the Highlands of Scotland. The right of the Hudson's Bay Company to grant this land was, however, disputed by the Northwest Company; and when the settlers commenced to build, they were driven off by the servants of the Northwest Company. Hostilities continued between the servants of the two companies for several years, and in 1816 there was a pitched battle between them in which Governor Semple, acting for Lord Selkirk, and a number of his colonists, were killed. The Earl of Selkirk arriving soon afterward, found his settlers scattered; but by energetic measures, and by help of 100 disbanded soldiers from England and Canada whom he had brought with him, he secured for his old and new protégés a peaceful settlement, captured the chief agent and several partners of the Northwest Company and sent them to York, in Upper Canada, for trial, on charges of arson, robbery and murder. They were not convicted but the colonists for the next few years enjoyed peace and quiet. They established themselves near Fort Garry; and in 1817 the earl obtained from the Indians a transfer of their right to the land two miles back from the Red river on both sides. Still the settlers had some difficulties to overcome, especially from visitations of grasshoppers. These were gradually surmounted; but the population, now including many half-breeds, remained very isolated. In 1821 the Hudson's Bay Company absorbed the Northwest Company, gradually extended its already vast territories and established a network of trading-posts across the continent, and practically controlled the Northwestern portion of Canada.

In 1869 the Hudson's Bay Company surrendered all their claims to the N. W. Territory to the British govt., which in the following year transferred that territory to Canada. The government accepted the lands upon condition of paying £300,000 sterling to the company; and also granted the company a twentieth part of all lands surveyed for settlement in Rupert's Land. The company

also retained its trading posts. The Canadian govt. now organized that portion of the Red river district between long. 96°-99° w. and lat. 49°-50° 30′ n. as the PROVINCE OF MANITOBA.

In 1869 the ignorant half-breed population, who were suspicious of the purchase of Rupert's Land, were easily persuaded by Louis Riel—an unscrupulous half-breed—to rebel against the government. With their fears thus aroused by Riel, they organized a force, imprisoned their English and Scotch opponents, seized Fort Garry, established a provisional government, robbed the treasury, and dictated terms to the gov. of the Hudson's Bay Company, to which he had to submit. A military force under Wolseley arrived 1870, and Riel, fearing capture, escaped, which put an end to the insurrection. Sentence of death was executed on Riel for heading a rebellion of half-breeds and Indians in the N. W. Territories 1885. The government was then established on a firm basis, civil and religious liberty and other privileges were restored and on July 15, 1870, the province of Manitoba was created by royal and parliamentary enactment. Since that time its history has been one of rapid growth and development along commercial, economic, and intellectual lines. Consult Bryce, *Manitoba* (1882); Chambers, *A Year in Manitoba* (1882); Begg, *Great Canadian Northwest* (1881); Hind, *Narrative of the Canadian Exploring Expedition of* 1857-58 (1860); Macoun, *Manitoba and the Great Northwest* (1882); Legge, *Sunny Manitoba, Its Peoples and Its Industries* (1893); Kingsford, *History of Canada* (1887-98); Bryce, *The Remarkable History of the Hudson's Bay Company.*

MANITO'BA LAKE: one of the three principal lakes in the province of Manitoba, Canada; about 130 m. long and 10 m. wide; fresh and shallow; connected with Lake Winnipeg by Dauphin river; navigable for vessels drawing 10 ft. of water; at high water, in spring time, it discharges its surplus water into Lake Winnipeg, and at such times the Dauphin river expands about midway between the two lakes, and forms a third, St. Martin's.

MANITOBA, UNIVERSITY OF: located at Winnipeg Canada; established in 1877 and originally known as Manitoba College. The university was established by the union of Manitoba College (Presbyterian 1871), St. Boniface Roman Catholic College (1818), and St. John's College (Church of England 1866). Its first examinations took place in 1878, May, when seven candidates presented themselves. In 1878 application was made to the Dominion government for a land grant, and at length, in 1885, under the 'Better Terms Settlement' of that year, 150,000 acres of good agricultural wild land was given to the University. This endowment is now valued at $1,250,000. In 1883, a native of Red River Settlement living in England, Mr. A. K. Isbister, who like many others, was attracted by the broad and cosmopolitan spirit of the young university, bequeathed $83,000 as a scholarship fund to the University. This fund has proved a great

boon to the students, as from it upward of $3,000 is given annually in scholarships.

In 1882 the Manitoba Medical College was founded and became affiliated to the University. In 1888 a new member of the sisterhood of Arts Colleges—Wesley College of the Methodist Church—was affiliated to the University; a College of Pharmacy was affiliated in 1902. A Baptist college in Brandon, the second city of the Province, though not affiliated, yet sends its students up to the University examinations.

The affiliated colleges have a representation of seven members each on the University council; the graduates of the University, now numbering upward of 400, have ten representatives, and the Provincial Government appoints seven. The University council thus consists of about 50 members. It has a chancellor appointed by the Provincial Government, and a vice-chancellor chosen by the council. The lieutenant-governor of Manitoba is Visitor. The executive of the council is a representative body of 13 members, and is called the 'Board of Studies.'

In 1893 the university act was changed to allow teaching to be done by the University in natural science, mathematics, and modern languages, the arts colleges taking up the other departments. In 1898 a site of seven acres in the heart of Winnipeg, valued at $120,000, was given by the Dominion Government to the University, and in 1900 the first building was erected. Teaching in natural science was begun in 1900, and in 1904 six professors in natural science and mathematics were appointed. There is also a large amount of intercollegiate teaching. Degrees are given by the University in arts, law, and medicine, and the several denominational colleges have the power to bestow degrees in theology on students who have passed a certain arts requirement in the University. These degrees on being reported become *ipso facto* degrees of the University.

Thus the two systems of university education—national and denominational—are combined, and the advantages of both obtained. The denominational colleges have their residences and grounds; and exercise discipline and social control over their students, while the provincial university conducts the examinations, confers degrees, and has taken over science teaching, the most expensive department of education. It may take other subjects in the future.

The University is supported by the revenue from the lands, a Provincial Government grant, fees of students and candidates, and by private benefactions—Lord Strathcona giving it for immediate purposes $20,000. In 1904 the University examined 812 candidates.

The arts curriculum is a blending of a fixed course with certain options in the first and second years, and then specializing is allowed in the third and fourth years in one of the departments of classics, mathematics, modern languages, philosophy, natural science, or a general course.

The University building accommodates the department of science, which is generally being well equipped for its work. A library has been begun, but is still in its infancy. The several affiliated colleges have large libraries, and the students have access to the Provincial Library and the new Carnegie Library of the city.

As the University of Manitoba is the only university in Canada west of Lake Superior, it cultivates the whole region of Manitoba, new Ontario, the Northwest Territories, and British Columbia. It holds local examinations at several points in Manitoba, as well as Regina, Calgary, and Edmonton in the Territories, and at Vancouver, Kamloops, and Victoria in British Columbia.

MANITOU, n. *măn'i-tô:* name given by the American Indians to any supernatural object as calling forth their fear or their worship; with something of the meaning of the Gr. *dæmon,* good or evil spirit; also of the African fetich, charm, amulet, or magical rite. The Indian idea of the 'Great Spirit' is as of the most powerful M.—not as of the one personal living God.

MANITOULIN ISLANDS, *măn-e-tô'lĭn* or *măn-e-tô-lēn':* group in Lake Huron; comprising Grand Manitoulin or Sacred Isle, and Little Manitoulin or Cockburn Isle, belonging to Britain; and Drummond Isle, belonging to the state of Mich. They are separated from the n. shore of Lake Huron by a channel 7 to 18 m. in breadth.

MANITOWOC, *măn-ĭ-tō-wŏk':* city, cap. of Manitowoc co., Wis.; on the Chicago and Northwestern and Wisconsin Central railroad 48 m. e.n.e. of Fond du Lac, 75 m. n. of Milwaukee, 105 m. n.e. of Madison. It is in a fertile, heavily timbered region; is nearly surrounded by a chain of hills 70 ft. high; has a large lake trade. The city is built on the w. shore of Lake Michigan and has a good harbor, with shipping docks. There is a large lake trade carried on at M. Ship-building is one of the leading industries. The factory operations include glue, furniture, agricultural implements, cigar and tool making. There are iron foundries, flour mills, brick yards, sawing and planing mills, leather goods factories and machine shops. The County Insane Asylum, Polish Orphan Asylum, St. Felix Industrial and Reform school, St. Mary's Hospital, the James Library, Court-house, high schools, public and parish schools and several handsome churches are at M. It also has national and savings banks and daily and weekly papers. Pop. (1910) 13,027.

MANKATO, *măn-kâ'tō:* city, cap. of Blue Earth co., Minn.; on the Minnesota river at the mouth of the Blue Earth, and on the Chicago, Milwaukee and St. Paul, Chicago, St. Paul, Minneapolis and Omaha, and the Chicago and Northwestern railroads; 86 m. s.w. of St. Paul. It is in a rich agricultural district, and contains 11 churches, state normal school, Rom. Cath. college, high school, graded schools, 3 public halls, 2 national banks (capital $200,000), and manufactories of linseed oil,

beer and ale, flour, furniture, foundry and machine-shop products. The city was first settled in 1852 by eastern people. It was incorporated 1858, July 15, and chartered as a city 1868, March 6. The present government, according to a charter of 1891, is vested in a mayor and in a council composed of six members. Mankato was the scene of several battles during the Sioux Indian war 1862-3. In 1863, 38 Indians were hung for murder. Pop. (1910) 10,365.

MANLEY, *măn'lĭ*, JOHN: 1733-1793, Feb. 12; b. Torquay, England: naval officer. He was bred to the sea; settled in Marblehead, Mass., early in life; became master in the mercantile marine; was appointed captain by Washington and ordered to intercept supplies for Gen. Gage's army in Boston 1775, Oct.; sailed in the schooner *Lee* and captured 3 British vessels in Boston harbor Nov. 29 and Dec. 8; was on cruising duty through the winter 1775-6; commissioned by congress captain in the navy Apr. 17, and assigned to command the frigate *Hancock,* 32 guns, then building in Boston, Aug. 22; captured the British man-of-war *Fox,* and was himself captured by the British frigate *Rainbow* 1777, July; commanded the privateer *Pomona* after being exchanged, till again captured and confined at Barbados; made his escape and commanded the privateer *Jason;* captured two British privateers 1779, July; was given command of the frigate *Hague* 1782, Sept.; and after being driven on a sand-bank at Guadaloupe by a British 74-gun frigate, defended himself against 4 ships of the line 3 days, and made his escape. He conducted the first and last naval operations in the revolutionary war.

MANLEY, JOSEPH HOMAN: American journalist and politician: b. Bangor, Maine, 1842, Oct. 13; d. Augusta, Maine, 1905, Feb. 7. He graduated from the Little Blue Abbott Academy at Farmington, Maine, in 1858 and in 1862, at the age of 21, from the Albany Law School. He was admitted to the bar in 1865, being appointed a commissioner of the United States district court, serving one year. In 1866 he was president of the city council of Augusta and in 1881 was appointed postmaster of Augusta by President Garfield, which office he held for seven years. Acquiring a half interest in the *Maine Farmer,* he joined hands with James G. Blaine in aggressive local and national politics, dictating the editorial policy of that paper for three years. He was a delegate to the republican national conventions of 1880 and 1888, was for many years chairman of the Maine republican state committee and a member of the republican national committee and was a notable figure in the executive committees of 1896 and 1900, which aided in the election of McKinley.

MANLEY, MARY DE LA RIVIÈRE: English author: b. in the island of Guernsey about 1672; d. London 1724, July 11. She succeeded Swift as editor of the *Examiner*

in 1711. She is known for her *Secret Memoirs and Manners of Several Persons of Quality of Both Sexes: from the New Atlantis* (1709), a licentious satire that caused the arrest of both the author and the publisher, though they were subsequently discharged. This work was continued in the *Memoirs of Europe* (1710). She also published *Letters Written by Mrs. Manley* (1696); *The Secret History of Queen Zarah and the Zarazians* (1705); *The Adventures of Revella* (1714); *The Power of Love: in Seven Novels* (1720); and other unimportant books.

MANLEY, THOMAS HENRY: American physician and author: b. Tewksbury, Mass., 1851, March 1; d. 1905. He was graduated at the medical department of the University of New York in 1875; and practiced his profession in Lawrence, Mass., until 1881, when he removed to New York. He was a visiting surgeon to many of the hospitals in the latter city; was professor of surgery in the New York School of Clinical Medicine; and published *Operations for Hernia* (1890); and *Local Anæsthetics* (1893).

MANLIUS, *măn'lĭ-ŭs*, MARCUS: Roman legendary hero, of the 4th century B.C., called Capitolinus because of his successful defense of the Capitoline Hill. Tradition says he was aroused to action by the cackling of Juno's sacred geese just in time to prevent the surprise of the citadel by the Gauls (390 B.C.). Two years before (392 B.C.), he defeated the Æqui; and six years after (384 B.C.) was thrown from the Tarpeian rock, having been declared guilty of plotting to become king or dictator. This judgment, almost certainly unjust, was due to the envy of the patricians, who distrusted Manlius's philanthropic endeavors to free plebeians sold for debt.

MANLY, BASIL: American clergyman and educator: b. Pittsborough, Chatham county, N. C., 1798, Jan. 28; d. Charleston, S. C., 1865, Jan. 25. He was graduated at South Carolina College in 1821, and, after filling several charges, in 1837 he became president of the University of Alabama, remaining there nearly 20 years.

MANLY, JOHN MATTHEWS, A.M., PH.D.: American educator: b. Sumter county, Ala., 1865, Sept. 2. He was graduated at Harvard in 1889; professor of English in Brown University 1891-8; and in the University of Chicago after 1898. He has contributed to several periodicals and has edited *Macbeth* (1896); *Specimens of the Pre-Shakesperean Drama* (1898); *English Poetry* (1907); etc.

MANN, *măn*, DONALD D.: Canadian contractor and financier: b. Acton, Ont., 1832. In the later seventies he went west, became manager for a firm of contractors who had a sub-contract on the Canadian Pacific line, and thereafter worked continuously as a contractor until the completion of the main railway. Between 1881 and 1883 he completed various contracts for railroads, and

in the two following years began railroad-building in the mountains. He also undertook contracts for construction and tunnels in Columbia Cañon and in the Selkirk Range of the Rocky Mountains. Together with Mr. William Mackenzie (q.v.) he constructed the Canadian Northern railway and in 1887 and a part of 1888 they constructed the Canadian Pacific short line through Maine. In December, 1888, Mr. Mann visited Panama, Ecuador, Peru and Chili with a view of building railways for the Chilian government, but was not satisfied with the prospects there and declined the contracts offered. Later he visited China. From August, 1889, to November, 1892, he was associated with Mr. James Ross in building the Qu'Appelle, Long Lake & Saskatchewan railway and with others built the Winnipeg electric street railway.

MANN, HENRY: American journalist: b. Glasgow, Scotland, 1848, March 25. He was educated in Scotland and England, but at 15 came to the United States, where he served in the federal army in 1864-5 and later in the wars with the Indians in the northwest. He has been on the editorial staff of the leading New York and Providence newspapers and was special correspondent in the war with Spain. In 1895-6 he was editor of the *Home and Country Magazine*, and in 1898-9 assistant editor of *Success*. He has published: *Ancient and Mediæval Republics* (1879); *Features of Society in Old and New England* (1885); *Turning Points in History* (1895); *The Land We Live In* (1896); *Adam Clarke* (1904); etc.

MANN, *măn*, HORACE, LL.D.: American statesman and educationist: 1796, May 4—1859, Aug. 2; b. Franklin, Mass. He graduated at Brown Univ., Providence, and studied law; and was elected to the legislature of Massachusetts 1827, where his first speech was in favor of religious liberty, and his second a plea for railways. He was an advocate of temperance reform and a founder of the State Lunatic Asylum. Removing to Boston, he was elected, 1836, to the state senate, of which he became president. After editing the revised statutes of the state, he was for 12 years secretary of the board of education. He gave up business and politics, and devoted his whole time to the cause of education, introduced normal schools and paid committees, and, 1843, made a visit to educational establishments in Europe. His report was reprinted in England and America. For 12 years he worked 15 hours a day, held teachers' conventions, gave lectures, and conducted a large correspondence. In 1848, he was elected to congress. At the end of his term, he accepted the presidency of Antioch College, at Yellow Springs, Ohio. Beside educational reports he wrote *Slavery, Letters and Speeches*.

MANNA, n. *măn'nă* [Heb. *man hu*, what is this? L. and Gr. *manna*]: food miraculously supplied to the children of Israel in the wilderness of Arabia. In modern

times the name is given to a species of sugar which exudes as a sweet juice from incisions made in the stems of the Manna Ash (see ASH), native of the mountainous parts of s. Europe. Sicily is the chief locality of the M., and there, in July or Aug., the collectors make a deep cut through the bark to the wood near the base of the tree with a curved-bladed knife, repeating such incisions daily in different places, always, however, on one side only, and gradually rising until the branches are reached, and then cutting some of the largest of those. The following year, the other side of the tree is operated upon, and this alternation gives the bark time to heal. If the weather is warm and favorable, the M. begins to ooze out of the cuts slowly, and to harden in lumps or flakes, which are from time to time removed by the collectors. M. is a light porous substance, of yellowish color, not unlike hardened honey, but harder and drier. There are various qualities known in commerce, according to the time of collection, the goodness of the season, and other causes. It is used chiefly in medicine, having a gentle purgative effect, which renders it valuable for administration to very young children. It consists principally of a crystallizable sugar called *Mannite* (q.v.) and an uncrystallizable sugar, which possesses the sweet and purgative properties. There are several species of ash that produce M.; also there are several other manna-yielding plants besides the ash, especially the manna-bearing Eucalyptus of Australia (*Eucalyptus manifera*), which is non-purgative, and is a favorite sweetmeat with the children of that country. Small quantities are found on the common larch (*Larix Europæus*), in some districts; this kind is known as M. of Briançon. M. is obtained in minute quantities also from various mushrooms, and from the fronds of some sea-weeds.

The M. of the Israelites appears (Ex. xvi. 14–36; Num. xi. 7–9; Deut. viii. 3–16; Josh. v. 12; Ps. lxxviii. 24, 25) as their food, supplied in a special way from God, in vast quantities, for their chief sustenance during the 40 years' wandering in the wilderness. It has been conjectured (see Ehrenberg, *Symbolæ Physicæ*, Fasc. i. 1823) to have been the saccharine substance called *Mount Sinai Manna*, which is produced in that region by a shrub, *Tamarix manifera*, a species of TAMARISK (q.v.), from the branches of which it falls to the ground. It does not, however, contain any mannite, but consists wholly of mucilaginous sugar. The exudation which concretes into this manna is caused by the punctures made in the bark by insects of the genus *Coccus* (*C. maniparus*), which sometimes cover the branches. It is a kind of reddish syrup, and is eaten by the Arabs and by the monks of Mount Sinai like honey with their bread. It was formerly supposed by many that the M. of the Jews was produced by a species of Camel's Thorn (q.v.). But, as is pointed out by Prof. C. E. Stowe, no natural product of Arabia now known as M. has the qualities or uses of the M. of Scripture. They all are condiments or medicines rather than foods; they are produced only between May and Aug., and not

through the year; they come only in small quantities, and not by the thousands of tons weekly as was requisite for the nation in the desert; they can be kept for long periods without spoiling, unlike the *daily* M. of Israel; they are not largely increased in amount for the time of one generation and then suddenly ceasing, as in Josh. v. 12. Any M. which sustained the Israelites must have been a special provision by Divine power (see Smith's *Bible Dict.*).

MAN'NA CROUP, or MAN'NA GROATS: kind of semolina, prepared in Russia, usually from the hard wheats of Odessa and Taganrog. In the process of grinding for flour, small rounded fragments of these hard grains are obtained from the grooves of the grinding-stones, and these constitute the ordinary manna groats, esteemed material for puddings. It is undistinguishable from the semolina of Italy. Another kind is made by husking the small grain of the aquatic grass, *Glyceria fluitans*, which is carefully collected for the purpose; it is an expensive luxury. Small quantities of the commoner kind are occasionally exported for use in other countries, but it is not well known.

MAN'NA GRASS (*Glyceria fluitans*, or *Poa fluitans*): grass plentiful in marshes, ditches, and by the sides of stagnant pools in Britain, and most parts of Europe; found also in N. America, Asia, and New Holland. It is known also as *Flote fescue*, *Floating Sweet Meadow Grass*, etc. (see FESCUE). It varies in height from one to three ft., and has a long, slender, nearly erect panicle, the branches of which are at first erect and appressed to the rachis; the spikelets awnless, slender, cylindrical, an inch long or nearly so, with 7–20 florets; the glumes small, unequal, and obtuse; the outer paleæ with seven prominent ribs and a membranous margin; a scale of one thick fleshy piece. The stems are decumbent at the base, and rooting at the joints; the leaves long and rather broad, the lower ones often floating. M. G. is perennial, and useful in irrigated meadows and in very wet grounds, affording large quantities of food for cattle. In many parts of Germany and Poland, the seeds—which fall very readily out of the spikelets, are collected by spreading a cloth under the panicles and shaking them with a stick; they are used in soups and gruels, are very palatable and nutritious, and are known in shops as *Polish Manna*, *Manna Seeds*, and *Manna Croup* (q.v.). They are a favorite food of geese, and eagerly devoured by carp and other fish.—Akin is the Reed Meadow Grass, Water Meadow Grass, or Reedy Sweet Water Grass (*Glyceria* or *Poa aquatica*), a still larger grass, with very abundant herbage, one of the most productive, indeed, of fodder grasses, growing in ponds, ditches, marshes, and the sides of rivers, often where they are tidal. Hay made of it is greatly preferred to that of other bog grasses. Its rapid growth often chokes up water-channels, so that they must be cleared of it.

MANNED: see under MAN.

MANNER, n. *măn'nėr* [It. *maniero*, well-trained—from L. *manuārĭŭs*, manageable, pertaining to the hand: It. *maniera;* F. *manière*, the handling of a thing, manner; OF. *manier*, habitual, accustomed—from L. *mănum*, the hand]: form; method; habit; sort or kind; way of performing or doing; peculiar carriage or deportment. MAN'NERS, n. plu. *-nėrz*, course of life; morals; deportment or bearing toward others; behavior. MAN'NERED, a. *-nėrd*, having manners; exhibiting the peculiar style of an artist or author, particularly in its objectionable form. MAN'NERISM, n. *-nėr-ĭzm*, a tasteless peculiarity; a peculiar mode of treatment carried to excess; a characteristic bearing or treatment. MAN'NERIST, n. *-ĭst*, one who executes his works in one unvaried and peculiar style, as an artist. MAN'NERLY, a. *-lĭ*, well-behaved; civil; respectful: AD. with civility; respectfully. MAN'NERLINESS, n. *-lĭ-nĕs*, quality of being mannerly. IN A MANNER, in a certain degree. *Note.*—As applied to art, MANNER has two quite different significations; in the one, it signifies a peculiarity of habit, and implies a kind of reproach against an artist—in the other, it is the artist's peculiar way of choosing, imagining, and representing his subjects, including what are called his style and handling.—SYN. of 'manner': way; mode; custom; fashion; degree; kind; mien; character; morals; habits; behavior; bearing; deportment; air; look; aspect; appearance.

MANNERS, *măn'ėrz*, THE FAMILY OF: noble English family, of Northumbrian extraction, their ancestor, Sir Robert de M., having been lord of the manor of Ethale or Etal, in that county in the 13th c. His descendant, also Sir Robert de M., in the time of Edward III., was gov. of the important border fortress of Norham Castle. In the reign of Henry VI., another Sir Robert de M. acted as sheriff of Northumberland; his grandson was raised to the earldom of Rutland by Henry VIII.; and the tenth earl was raised to the dukedom 1602. The eldest son of the third duke was the celebrated Marquis of Granby (q.v.)

MANNHEIM, *mân'hīm:* formerly cap. of the Rhenish palatinate, now the most important trading town in Baden, and, after Cologne and Coblentz, the most important on the Rhine; in a fertile plain, on the right bank of the Rhine, on a triangular piece of ground inclosed between the Rhine and the Neckar at their junction, about 18 m. below the city of Spires. The site of the town is low, and a high dike protects it from inundations. A bridge of boats crosses the Rhine, here 1,200 ft. in breadth, and a chain-bridge the Neckar. The town is remarkable for cleanliness and regularity, the whole being laid out in quadrangular blocks. Its fortifications were destroyed after the peace of Lunéville, and gardens now occupy their place. The palace, built 1720–29 by the Elector Palatine Karl Philipp, is one of the largest buildings of the kind in Germany. The city contains a lyceum with a library, a botanic garden, an observatory, etc. Machinery, iron, brass, india-rubber, sugar, mirrors,

chemicals, cigars, shawls, linen, and playing-cards are chief manufactures; and there are tanneries and bleach-works. A thriving trade is carried on chiefly by boats on the Neckar and Rhine. About 3,000 river-craft, carrying nearly 700,000 tons of goods annually enter the new harbor, whose cost was more than $3,000,000. M. is connected by railway with the chief towns of Germany. M. was a mere village till the beginning of the 17th c., when a castle was built by the Elector Palatine Frederick IV., around which a town grew up, peopled chiefly by exiles for religion from the Netherlands. It was several times taken and retaken during the wars of the 17th c., totally destroyed by the French in the end of that c., rebuilt, and strongly fortified. Of the inhabitants, the Jews number about 4,500; the rest are Rom. Cath. and Prot. in about equal proportions. Pop. (1900) 141,131.

MANNING, *măn'ĭng*, HENRY EDWARD, D.D.: Cardinal of the Rom. Cath. Church; b. Totteridge, in Hertfordshire, Eng., 1808, July 15; d. 1892, Jan. 14; educated at Harrow and at Balliol College. While at Oxford he was ordained in the Church of England, and was remarkable as an eloquent preacher, and as a leader of the Tractarian party. In 1834 he obtained a country rectory (Lavington and Grafton, Sussex co.) and 1840 became archdeacon of Chichester. In 1851 the legal decision in the Graham case subjecting the church to the authority of the crown on a question of doctrine, occasioned his leaving the Church of England, and joining the Church of Rome, in which he was made priest 1857. For a time superior of a monastic house, he was, 1865, appointed Rom. Cath. Archbishop of Westminster. At the Œcumenical Council, 1870, M. was one of the most zealous supporters and promoters of the infallibility dogma; and, named cardinal 1875, he continued until the end to be one of the great leaders of the Ultramontane section of the church. Besides being the leading spirit in most Rom. Cath. movements in England, he took part in many non-sectarian good works, was energetic for public education, and did much to improve the condition of the poor Irish in London. He had a keen intellect, great spiritual fervor, and was devoted to good works. He was especially influential in adjusting the differences between the London dockmen and the directors of the dock companies which had led to a great strike 1889. Before his secession to Rome, M. published several volumes of powerful sermons; since then, his publications have been mainly polemical. Among his numerous volumes, pamphlets, and articles, are discussions of the temporal power of the pope, infallibility, the Vatican Council, and Ultramontanism.

MANNING, *măn'ĭng*, JAMES, D.D.: 1738, Oct. 22—1791, July 29; b. Elizabethtown, N. J.; educator. He graduated at the College of N. J., 1762: was ordained pastor of a Bapt. church in Morristown, N. J., 1763, Apr. 19; removed to Warren, R. I., and opened a Latin school 1764, organized a Bapt. church there, and was its pastor

1764–70; led the movement that resulted in the foundation of Rhode Island College (changed to Brown Univ., in honor of Nicholas Brown 1804) 1764; was its pres. 1765–90, at Warren till 1770, afterward at Providence till his resignation; and was pastor of the First Bapt. Church at Providence from 1770 till his death. The exigencies of the revolutionary war compelled the closing of the college and the occupation of its buildings for barrack and hospital purposes 1776, Dec. 17—1782, May 27; and during this period M. filled his pulpit regularly and was active in patriotic work. He was chairman of the Providence school committee, an influential federalist, member of congress 1786, and a powerful advocate of the ratification of the federal constitution by R. I. He received his degree from the Univ. of Penn. 1785.

MANNING, MANNED, MANNISH: see under MAN.

MANNING THE NAVY: furnishing war-ships with the crews needful for all purposes. Until a recent date, British sailors engaged themselves for only the term in which a certain vessel should be in commission, which there was a tacit understanding would be about five years. In the Napoleonic and former wars, when seamen were urgently needed, and knew their value, the pressgang was resorted to, and vacancies were filled by compulsion: see IMPRESSMENT. At present, seamen for the British navy are encouraged by contingent advantages to enlist for a specified number of years, at the end of which they become entitled to permanent pension. On the paying off of their ship, these men are granted liberal leave, after which they join a dépôt, and are thence drafted to some other vessel in which their services are required. As a reserve for times of emergency, there is the Royal NAVAL RESERVE (q.v.), more than 20,000 strong, a very important auxiliary. The Naval Artillery Volunteers (see VOLUNTEERS) in some respects take the place of the Coast Volunteers, a force not now maintained.

The Dutch, Danish, and Swedish navies are manned mainly by volunteers. The navies of France, Russia, and Italy are manned by conscripts levied in the maritime provinces of the respective countries. The German ships of war depend on the law of compulsory service for their complement.

The U. S. navy is manned by volunteers enlisted for definite periods. In order to insure a sufficient supply of men, and to have them well trained and experienced in seamanship, congress, 1875, authorized the annual enlistment of 750 boys, between 16 and 18 years old, to serve until 21 years of age. The naval department maintains a number of school-ships, on which these lads receive a thorough nautical education and rigorous training in practical seamanship. As the navy has been reduced to the low standard of 7,500 men, the system of boy enlistment, and graduation from the training-ships into the regular service, is rapidly manning our entire navy with well educated and trained sailors of superior

efficiency, while in time of war it will supply the nucleus of a much larger force of experienced seamen if so desired. So satisfactory has this system of manning the navy been found, that the British govt. has adopted some of the essential features of it, with much benefit. See ENLISTMENT.

MANNING THE YARDS: for practical purposes, sending a sufficient number of men aloft and on to the yards to furl or unfurl the sails; for purposes of compliment, arranging along the yards a row of sailors, with their hands touching—the men standing on the yard itself, and holding to a rope which runs across about breast-high between the lifts. When the men are all in clean white uniforms, this has a singularly lively and picturesque effect. It is done when any great personage passes by the ship or comes on board, or in commemoration of some great event; but, as the operation is attended with considerable and unnecessary danger, it is, under present regulations, far more rare than formerly.

MANNITE, *măn′īt*, or MUSHROOM SUGAR ($C_6H_{14}O_6$): peculiar saccharine matter which forms the principal constituent of Manna (q.v.); found also in several kinds of fungi, in asparagus, celery, onions, etc. It is most readily obtained by digesting manna in hot alcohol. On cooling the filtered solution, the M. is deposited in crystals, which are very soluble in water, and have a sweet taste. It is not susceptible of alcoholic fermentation, and may be readily distinguished from cane and grape sugar by simple tests. Heated with hydrate of potash, it gives a mixture of acetate, formate, and valerianate of potash, hydrogen being evolved.

MANNUS, *măn′ŭs* [fr. Aryan root *man*, to think]: according to Tacitus, the name given by the Germans to the son of the earth-born god *Tuisco*. From his three sons, they derived their three great tribes, *Ingavones*, *Iskavones*, and *Herminones*. M. belongs, not to the Teutonic people alone, but to the great mythus of the origin of the human race, common to the whole Aryan family, and, like the Hindu *Manu* or *Manus*, stands forth as the progenitor of the inhabitants of earth endowed with reason. Compare Wackernagel in Haupt's *Zeitschrift für Deutsches Alterthum* (Bd. 6).

MANOËL, *mâ-nō-ĕl′*, DON FRANCESCO: most eminent of modern Portuguese lyric poets: 1734–1819, Feb. 25; b. Lisbon. The hostility of the Inquisition compelled M. to abandon his native country, and he took up his residence at Paris, where he died. There are more editions than one of his *Obras completas*. His Odes are highly esteemed.

MANŒUVRE, or MANEUVER, n. *mă-nō′vėr* [F. *manœuvre*, a manœuvre—from mid. L. *manuŏpĕra*, a working with the hand—from F. *main;* L. *mănus*, the hand, and F. *œuvre;* L. *opĕrā*, work], management with address or artful design; adroit proceeding; stratagem; dexterous movement or operation, as with troops or ships—gener-

ally some collateral movement, not openly apparent, of bodies of men or squadrons of ships, by which an enemy is coerced, or by which it is sought to compel him to take some course adverse to his interests: V. to move dexterously troops or ships for attacking or defending with advantage, or as an exercise in tactics; to change the position of troops or ships; to manage with address or art. MANŒUVRING, imp. *mă-nō′vėr-ĭng*. MANŒUVRED, pp. *mă-nō′vėrd*. MANŒUVRER, n. *mă-nō′vėr-ėr*, one who manœuvres.

MAN OF SIN, THE: the Anti-Christ, referred to by the apostle Paul, II. Thess. ii. 3, further characterized as the Son of Perdition; and (in verse 8) as the Lawless One; the extreme personal historical contrast to Jesus Christ. His appearance is to be the climax of the last great apostasy in human history, and his fate is to be destruction by the irresistible might of the re-appearing Christ. The attempt among some of the Prot. reformers to identify the M. of S. with the papal power—retained in some creeds even to this day, e.g., the Westminster Confession, though now scarcely believed in—was unwarrantable, and needs for its excuse a remembrance of the fierce conflict of the Reformation time.

MAN-OF-WAR: term of unknown origin, for an armed vessel carrying cannon, and belonging to some constituted and acknowledged government. To such a vessel pertain the privileges of war; her deck is, by a legal fiction, taken to be a portion of the soil of the nation whose flag she carries; in time of war, she is justified in attacking, sinking, burning, or destroying the ships and goods of the foe, and by the law of nations, she may stop and search the merchant-vessels of neutral powers which she suspects of carrying aid to her enemy: see CONTRABAND. In case of being overpowered, the crew of a man-of-war are entitled to the ordinary mercy granted to vanquished combatants, lawfully fighting. Any vessel making war, but not belonging to an acknowledged government, is either a Privateer (see LETTER OF MARQUE) or a Pirate (see PIRACY).

MAN-OF-WAR BIRD: see FRIGATE BIRD.

MANOMETER, n. *măn-ŏm′ĕ-tėr* [Gr. *manos*, rare, thin; *metron*, a measure]: properly an instrument for measuring the rarity of the air or of other gases; but the name is most frequently applied to instruments for indicating the elastic force of gases, which is always inversely proportional to their rarity. The several kinds of Barometers (q.v.) are really manometers; so is the steam-gauge of a Steam-engine (q.v.) MANOMETRIC, a. *măn′ō-mĕt′-rĭk*, or MAN′OMET′RICAL, a. *-mĕt′rĭ-kăl*, pertaining to. MANOM′ETER is also called a MANOSCOPE, which see.

MANOR, n. *măn′ėr* [OF. *manoir*, mansion-house of the lord of a feudal estate, the estate itself: mid. L. *mansus*, a residence—from L. *manĕrĕ*, to remain: comp. Gael. *mainnir*, a fold for cattle]: in English *law*, a freehold estate held by the lord of the manor, who is entitled by

immemorial custom to maintain a tenure between himself and the copyhold tenants, whereby a kind of feudal relation is maintained between them; hence, anciently the district over which a lord has feudal authority. But subinfeudation in England was prohibited by the statute of *Quia Emptores*, in the reign of Edward I., and no manor could be created since that date. Copyhold estates are thus a relic of ancient feudalism, and form an exception to the general rule in England, where freeholds form the highest kind of estate known to the law. (See COPYHOLD.) Manors closely resemble the feudal estate held in Scotland by all proprietors of land, who have to this day unlimited powers of subinfeudation, which they constantly act upon, and thus keep up a chain of vassals (See FEU.) MANORIAL, a. *mă-nō'rĭ-ăl*, belonging to a manor. MANOR-HOUSE, the house of the lord of the manor. LORD OF THE MANOR, the proprietor or feudal superior, titled or otherwise, of the manor or estate.

MANOSCOPE, n. *măn'ō-skōp* [Gr. *manos*, rare or thin; *skopĕō*, I view]: a manometer.

MANRED, n. *măn'rĕd*, or MAN'RENT, n. *-rĕnt* [AS. *man*, man; *ræden*, law, condition, state]: in *OE.* and *Scot.*, the state or condition of a person; the homage due to a superior; the power of a superior; vassalage. BONDS OF MANRED, or of MANRENT, anciently, agreements in the Highlands of Scotland between the greater and lesser magnates, where protection from one party was stipulated in return for allegiance on the other. Such bonds were common till two or three centuries ago, the royal authority being comparatively powerless to repress internal warfare among the fastnesses of the north and west.

MANRESA, *mân-rā'sá:* a town of Spain, in the province, and 30 m. n.w. of the city of Barcelona. It is situated in a fertile and well-irrigated district, on the left bank of the Cardonet. Manresa has manufactures of cotton and silk fabrics, broadcloths, etc. In 1811, it was set on fire by Marshal Macdonald, when more than 800 houses, with churches and manufactories, were burned. Pop. 16,264.

MANS, LE, *lĕh mŏng:* city of France, formerly capital of the province of Maine, now of the department of Sarthe, on the right bank of the river Sarthe, 132 m. s.w. of Paris by railway. The chief edifice is the cathedral, containing the tomb of Berengaria of Sicily, queen of Richard Cœur de Lion. There is a public library of 50,000 vols. and several artistic and scientific institutions. The town manufactures wax-candles, woolens, lace, soap, and hosiery, and is famous for its poultry, of which it sends a large supply to the metropolis. It gives its name to a battle in the Franco-Prussian war of 1870-1, in which the French—the second army of the Loire—were defeated with the loss of 20,000 prisoners. This battle rendered impossible the relief of Paris. Le Mans

(anc. Cenomani) was, in the age of Charlemagne, one of the chief cities of the Frankish empire. Pop. (1901) 63,272.

MANSARD (or MANSART), *mŏng-sâr'*, JULES HARDOUIN: architect: 1645-1708; b. Paris: son of Jules Hardouin, painter, and nephew of François Mansard, architect, whose name he assumed. He studied architecture with his uncle, coöperated with him in planning and building several churches and numerous chateaux; and after establishing himself independently, built the chateau of Clagny for Mme. de Montespan; was appointed architect to Louis XIV.; and became general superintendent of the royal buildings, arts, and manufactures. His most noted works are the palaces of Versailles and Grand Trianon, the places Vendôme, Louis XIV., and des Victoires, the dome and completion of the Hôtel des Invalides, the gallery of the Palais Royal, and the chateaux of Marly and Lunéville. He became an obsequious courtier, was given numerous dignities and honors, and was charged with profiting on the vanity and caprice of the king. See MANSARD ROOF.

MANSARD ROOF, n. *măn'sârd-rôf* [after the inventor, *François Mansard*, Fr. architect, 1598-1662]: roof constructed with a break in its slope, so that each side has two planes, the lower being steeper than the upper. The framework ought to be arranged so that its parts are in equilibrium. This kind of roof has the advantage over the common form of giving more interior space for living room, and was in favor some years ago in the United States; but is now much less used, as it does not enter readily into artistic combinations now in vogue. The mansard roof of later years was really a disguised and decorative modification of the severely simple gambrel of a hundred years ago, which was Mansard's invention.

MANSE, n. *măns* [Norm. F. *manse;* mid. L. *mansus*, a residence—from L. *manērĕ*, to remain]: in Scotch *law*, dwelling-house of the parish clergyman of the Established Presb. Church: in popular use the term is often applied to the dwelling-house of any minister of a dissenting congregation, though no legal right exists in the latter case. In the Established Church, every minister of a rural parish is entitled to a manse, which the heritors or landed proprietors are bound to build and uphold; and he is entitled, as pertaining to the manse, to a stable, cowhouse, and garden. The manse must, by statute, be near the church. The usual sum allowed of late years to build a manse is £1,000. The ministers of rural parishes only are entitled to a manse. MANSION, n. *măn'shŭn* [OF. *mansion*—from L. *mansĭōnem*, a dwelling], *formerly*, any place of residence; a large house or residence.

MANSEL, *măn'sĕl*, The Rev. HENRY LONGUEVILLE, B.D.: Waynflete professor of moral and metaphysical

philosophy in Oxford Univ.: 1820-1871, July 31; b. Cosgrove, Northamptonshire, in which parish his father was rector. He was educated at Merchant Taylors' School, and at St. John's College, Oxford; and graduated 1843. In 1855 he was appointed reader in moral and metaphysical philosophy, in Magdalen College; 1859, became Waynflete professor; 1867, was appointed Regius professor of eccles. history, and canon of Christ Church, Oxford. His published works are: Aldrich's *Logic,* with Notes (1849); *Prolegomena Logica* (1851); article *Metaphysics,* in 8th ed. *Encyc. Britannica* (1857), afterward published separately; *Bampton Lectures—The Limits of Religious Thought* (1858); *The Philosophy of the Conditioned* (1866), in reply to Mill's *Review of Hamilton's Philosophy.* He was co-editor with Prof. Veitch of Sir William Hamilton's Lectures. Dean Mansel was regarded as belonging to the school of Sir W. Hamilton, as that had been developed from certain principles in the system of Kant. He takes issue with Hamilton, however, on a number of important points, e.g., the nature of causation. He was well-versed in metaphysical philosophy, and wrote in a clear and elegant style. His *Bampton Lectures* occasioned much controversy, both theological and philosophical. For an examination of Mansel's philosophical views, see CONDITIONED, THE PHILOSOPHY OF THE.

MANSFIELD, *măn'fēld:* city, capital of Richland county, O.; on the Baltimore & Ohio, the Pennsylvania, and the Erie railroads; 65 m. n. by e. of Columbus. It is in a fertile and populous region, on a commanding elevation; has a wholesale mercantile trade of more than $3,000,000, and a manufacturing trade of $4,000,000 per annum. The chief industries are the making of machinery, brass goods, carriages, wagons, street cars, electrical supplies, paper, cigars, watch-cases, stoves, farming implements, webbing and suspenders. The state reformatory is at Mansfield, also a Children's Home, Y. M. C. A., public and parish schools and many churches. There are several banks and newspapers, library and hall, and many elegant residences. The city owns and operates water, sewage and garbage plants. Pop. (1910) 20,768.

MANSFIELD, *măn'fēld:* market-town of England, county of Nottingham, 14 m. n. of the town of Nottingham; surrounded by the remains of the ancient forest of Sherwood. It stands in the centre of a large manufacturing and mining district, and contains, among other institutions, a Royal Free Grammar School. Silk, cotton and doubling mills are in operation, and the corn and cattle markets are largely attended. Pop. 21,500.

MANSFIELD, *măn'fēld,* EDWARD DEERING: American author: b. New Haven, Conn., 1801, Aug. 17; d. Morrow, Ohio, 1880, Oct. 27. He was graduated at West Point in 1819 and at Princeton in 1822, when he took up the study of law and was admitted to the bar in

1825. He went to Cincinnati and there engaged in practice until 1835, when he accepted the chair of constitutional law and history in Cincinnati College. This post he resigned to enter the field of journalism and was editor of the *Cincinnati Chronicle*, the *Atlas*, and the *Railroad Record*. For many years he was a contributor to the New York newspapers under the title 'Veteran Observer.' Among his many books are: *Political Grammar* (1834); *History of the Mexican War* (1848); *American Education* (1850); *Personal Memoirs* (1879); etc.

MANSFIELD, JARED, LL.D.: 1759—1830, Feb. 3; b. New Haven; mathematician. He graduated at Yale, 1777; became distinguished as a teacher of mathematics in New Haven and Philadelphia; was appointed captain U. S. engineer corps 1802, May 3, and assigned to the U. S. Milit. Acad. as professor of mathematics; promoted major 1805, June 11, and lieutenant colonel 1808, Feb. 25; and resigned his commission 1810, July 23. He was surveyor-general of Ohio and the Northwest Territory 1803-12; and professor of natural and experimental philosophy in the U. S. Milit. Acad. 1812-28. He is believed to have established the first astronomical observatory in the United States near Cincinnati, while surveyor-general. He received his degree from Yale 1825, and published *Essays, Mathematical and Physical* (New Haven 1802).

MANS'FIELD, JOSEPH KING FENNO: 1803, Dec. 22—1862, Sep. 18; b. New Haven: soldier. He graduated at the U. S. Milit. Acad., where he was assistant professor of natural philosophy in his last year, 1822; entered the engineer corps, and served on the board appointed to plan fortifications for the coast harbors and cities; promoted 1st lieutenant 1832, and captain 1838; was chief engineer to Gen. Taylor's army in the Mexican war, and received the brevets of major for the defense of Fort Brown, Tex., which he had built; lieutenant-colonel for Monterey, and colonel for Buena Vista; was on fortification duty 1847-53; and was inspector-general of the army 1853-61. In 1861, May, he was commissioned brigadier-general and placed in command of the national capital. He fortified the city on all sides, and was then sent south, commanding at Camp Hamilton, Va., and Newport News. He took part in the capture of Norfolk 1862, May 10; was military governor of Suffolk June—Sep.; promoted major-general volunteers July; given command of a division in the Army of the Potomac Sep. 10; and was mortally wounded in the battle of Antietam Sep. 17, dying the following day.

MANSFIELD, RICHARD: American actor: b. Heligoland, 1857; d. New London, Conn., 1907, Aug. 30. He first studied art, opening in a studio in Boston for a time, but later returned to England, and entered the theatrical profession. He at first played small parts in comic opera, and first appeared in America as Dromez

in *Les Manteaux Noires* at the Standard Theatre, New York. From that time he was very successful in a wide variety of plays, and became the head of his own company. He created such parts as Beau Brummel, Baron Chevrial, Dr. Jekyll and Mr. Hyde, and Monsieur Beaucaire; among his other most successful roles were: Cyrano de Bergerac, Shylock in *The Merchant of Venice*, Henry V., Brutus in *Julius Cæsar*, and Prince Karl in *Old Heidelberg*. His own acting, as well as the work of his company, which he carefully supervised, was of a high artistic standard, carefully worked out in details. Consult: Hapgood, *The Stage in America;* Strang, *Famous Actors of To-day in America.*

MANS'FIELD, William Murray, Earl of: lord-chief-justice of the king's bench: 1705, Mar. 24—1793, Mar. 20; b. Perth, Scotland; fourth son of Andrew, Viscount Stormont. He studied at Christ Church, Oxford; took the degree M.A. 1730, and was called to the bar 1731. He soon acquired extensive practice—namely, it seems, by his facility and force as a speaker, for neither then nor at any subsequent period was he reckoned a very erudite lawyer; and he was often employed on appeal cases before the house of lords. In 1743, he was appointed solicitor-general, entered the house of commons as member for Boroughbridge, and at once took a high position. In 1746, he acted, *ex officio*, as counsel against the rebel lords Lovat, Balmerino, and Kilmarnock; was appointed king's attorney 1754; and at this time stood so high that had not the keenness of his ambition been mitigated by a well-founded distrust of his fitness for the peculiar work of leading the house, he might have aspired to the highest political honors. He became chief-justice of the king's bench 1756, and entered the house of lords under the title Baron Mansfield of Mansfield, in the county of Nottingham. As his opinions were not those of the popular side, he was exposed to much abuse. Juniors, among others, bitterly attacked him; and during the Gordon riots, 1780, his house, with all his valuable books and manuscripts, was burned. He declined, with much dignity, indemnification by parliament. In 1776, Murray was made Earl of Mansfield. He worked hard as a judge till 1788, when age and ill-health forced him to resign. Mansfield's great reputation rests on his judicial services. He defined the principles governing commercial transactions, and is considered the founder of English commercial law, bringing the ancient laws into harmony with the requirements of modern society.

MANS'FIELD, Mount: highest peak of the Green Mountains; in Cambridge, Lamoille county, Vt.: 'chin' 4,359 ft. above sea-level, 'nose' 4,019, 'forehead' 3,859. It is a summer resort, accessible from the e. and the w.; last railway station on the w., Underhill; favorite route by way of Stowe, on the s.e., reached by stage from Morrisville (8 m.) on the St. Johnsbury & Lake Champlain

railroad, or from Waterbury (10 m.) on the Central Vermont railroad. From the 'chin' is obtained one of the most comprehensive views in all New England, including, on a clear day, nearly the entire length of Lake Champlain and the Adirondacks in the remote horizon on the w.; the mountains around Montreal, and occasionally the spires and towers of the city, on the n.; the valley of the Connecticut and the White Mountains, and sometimes Mount Washington itself, on the e.; and the rival peak of Camel's Hump and the main chain of the Green Mountains on the south.

MANSLAUGHTER, n. *măn'slaw-ter* [*man*, and *slaughter*]: the destruction of the human species; in *law*, the 2d degree of felonious homicide. Murder and manslaughter are distinguished from each other by the intent which causes or accompanies the act. If a homicide be not justifiable nor excusable, and yet be not committed with malice aforethought, it is manslaughter. It is quite certain that the intent need not be to kill; for while there must be a criminal intent to make a person amenable to law as a criminal, yet if one crime be intended, and in the act of committing it another of a higher character be also committed without intent, the criminal is responsible for this higher crime. The general principle laid down in respect to manslaughter is, that not only a positive intention to commit some crime, but mere negligence may make one guilty. If any one take upon himself an office or duty requiring care or skill, he is liable for the want of either; and if death be the consequence of his ignorance or carelessness, he is guilty of manslaughter. So if one driving furiously run over and kill a person whom he did not see, or if one in command of a steamer or sailing-vessel by reason of gross negligence run down a boat and some one in it be drowned, this would be manslaughter. So if any one, whether medical by profession or not, deal with another as a physician, and through gross want of care or skill kill him; or if any one charged with building a house of any kind construct it so badly that it falls and kills persons within or near it; or if in building he drop a stone upon some one passing below, and kill him; in all these cases he would be guilty of manslaughter, provided he were grossly negligent in the act causing the death. This is the essential question.

The judicial treatment of this crime, being regulated by statute, varies in the several states. The element of premeditation is not essential to conviction of this crime. There are cases which the law regards as only manslaughter, without evidence of momentary excitement; partly because the law infers that from such a provocation there must be excitement; and partly, perhaps, because the party killed brought his death upon himself by his outrageous wrong. Thus, if a husband detects his wife in adultery, and instantly and purposely takes

either her life or the adulterer's, it is only manslaughter. Not so, however, if he waits for a subsequent opportunity, for then the first reason wholly fails, and the killing becomes murder.

In New York state four degrees of manslaughter are defined. The first degree, briefly stated, consists of killing without the purpose of death, when the deceased was engaged in perpetrating or attempting a crime less than felony, and where such killing would be, at common law, murder. Assisting in self-murder is manslaughter in the first degree, as also wilfully killing an unborn quick child by injury to the mother if it would be murder in case the mother died from the injury. The second degree consists in procuring abortion otherwise; killing in the heat of passion without the intent of death, but in a cruel and unusual manner; or killing unnecessarily one attempting to commit felony. The third degree is killing in heat of passion, without intent of death, but with a dangerous weapon; involuntary killing, by procurement or negligence of another, while the person killed is engaged in committing a trespass on property; suffering an animal known to be mischievous to go abroad without care, or keeping it without care, and thereby causing death; receiving wilfully or negligently so many persons into a boat or vessel as to cause death; racing while in command of a steamboat carrying passengers, bursting the boiler, and so killing; killing by a physician while in a state of intoxication. The fourth degree may be said to include all other modes or forms of manslaughter, known as such at common law, and of a milder kind than the preceding. See HOMICIDE.

MANSOR, MANSUR: second caliph of the house of Abbas. See ALMANSUR.

MANSUETE, a. *măn'swēt* [L. *mansuetus*—from *manus*, the hand; *suetus*, pp. of *suesco*, I accustom]: tame, gentle; not wild, not ferocious; gentle, kind, meek, courteous, mild.

MANT, v. *mănt* [Gael. *mannt*, to stutter in speaking]: in *Scot.*, to stammer or stutter in speech: N. a stammering in speech. MANT'ING, imp. MANT'ED, pp.

MANTCHU'RIA, or MANTCHOO'RIA. See MANCHURIA.

MANTEGNA, *mân-tān'ya*, ANDREA: 1431—1506, Sep. 13; b. Padua, Italy: painter. He studied painting with Francesco Squarciona, who adopted him as a son; painted an altar-piece for the Church of St. Sophia at Padua when 17 years old, and afterward added the evangelists; executed in fresco the life of St. James and the legend of St. Christopher in the Church degli Eremitani, and St. Mark in the Church of St. Guistina, Padua; went to Mantua 1468, invited by Ludovico Gonzaga, for whom he painted 9 cartoons representing the triumph of Julius Cæsar after his conquest of Gaul, now in Hampton

Court, England; spent 1485-90 in Rome at the request of Pope Innocent VIII., and painted a series of remarkable frescoes in the Belvedere Chapel, subsequently destroyed; engraved more than 50 of his designs, of which 30 are known to collectors; and crowned his fame by the *Madonna della Vittoria*, commemorating the victory of Gonzaga over Charles VIII. of France, 1495, now in the Louvre, Paris.

MANTEL, n. *măn'tl* [OF. *mantel*, a cloak—from L. *mantellum*, a means of covering or hiding: *mantel* and *mantle*, though from the same root, and primarily having the same signification, are differently spelt in order to distinguish the one from the other]: horizontal shelf or slab, or other ornamental work over the fireplace and above the chimneypiece—called also MANTEL-SHELF. MANTELPIECE, formerly, the lintel over the opening of a fireplace supporting the masonry above: now denoting the stone or wooden jambs, lintel, and shelf; thus the same as mantel. MANTEL-MIRROR, a mirror placed above the mantelpiece and resting on it—as distinguished from a *pier-mirror*, one placed in the space between two windows, or other similar position in an apartment. *Note.*—The *mantelpiece* proper consists of highly ornamental raised-work above the chimney, giving dignity to the fireplace, sometimes ornamented with the family coat of arms in carved work. The *mantling-work* is now commonly represented by a horizontal slab of stone, or shelf of wood, all below which is termed the chimneypiece: see CHIMNEYPIECE.

MANTELL, *măn'tel*, GIDEON ALGERNON: 1790-1852, Nov. 10; b. Lewes, Sussex: British paleontologist and geologist. He studied medicine, and practiced in his native town; removed to Brighton, thence to London, where he died. M.'s principal works are—*Fossils of the South Downs* (1822); *Wonders of Geology* (1838), perhaps the most popular geological work ever written by an Englishman. He was a very voluminous writer, no less than 67 works and memoirs of his being mentioned in Agassiz and Strickland's *Bibliotheca Zoologiæ et Geologiæ*. His claims to a permanent place in the history of science rest chiefly on his laborious investigations into the fossils of the Wealden beds. To him are due the discovery and description of four out of five of the great Dinosaurian reptiles—viz., the *Iguanodon*, *the Hylæosaurus*, the *Pelorosaurus*, and the *Regnosaurus*.

MANTELLIA, n. *măn-tĕl'lĭ-ă* [after Dr. *Mantell*]: in *geol.*, fossil cycadaceous stems of a sub-cylindrical shape, covered with rhomboidal leaf-scars, found in the oolitic formation termed crows' nests by the quarrymen.

MANTES, *mŏngt* (anc. *Medunta*): town of France dept. of Seine-et-Oise, on the left bank of the Seine, 29 m. w.n.w. of Paris. M. was a town of the Celts, from which the Druids were expelled by Julius Cæsar. William the Conqueror took it by assault 1087, and here he received the injury which caused his death.—Pop. 7,032.

MANTEUFFEL, *mân'toy-fel*, Edwin Hans Carl, Baron von.: b. 1809, Feb. 24—1885, June 17; b. Magdeburg, Germany: soldier. He entered the Prussian army 1826; was appointed on aide to the king 1848; was prominent in the reorganization of the Prussian army; and became lieut.-gen. and chief of milit. cabinet 1861. In 1864 he was conspicuous in the Schleswig-Holstein war, and had charge of the operations that culminated in the occupation of Jutland. After the close of the war he arranged the convention of Gastein, which adjusted the difficulties between Austria and Prussia, and was then appointed milit. and civil gov. of Schleswig, and commander of the Prussian troops in Holstein and of the naval station at Kiel. In the Austro-Prussian war, 1866, he commanded the chief army of the Main, and received the order of merit from the king for distinguished services. After executing a diplomatic mission to St. Petersburg, he became gen. of cav., gen. in command in Schleswig-Holstein, and commander of the 9th army corps; and 1868 was appointed commander of the 1st army corps. In the Franco-German war he commanded the 1st corps before Metz; captured Rouen, Amiens, and Dieppe with the 1st grand German army; and with the s. German troops drove Bourbaki's French army of the east into Switzerland. He was commander-in-chief of the German army of occupation in France 1871–73; appointed field marshal gen. and aide-de-camp gen. to the emperor, and invested with the Black Eagle 1873; and became gov. of Alsace-Lorraine, where he instituted a conciliatory administration, 1880.

MAN'TIDÆ: see Mantis.

MANTIGER, n. *măn'tĭ-jẽr* [L. *mantĭchōra*, a beast having the face of a man and the body of a lion]: a large variety of baboon.

MANTIGER, *măn'tĭ-jẽr*, or Mantègre: heraldic monster with the body of a tiger, the head of an old man, and long spiral horns; one of the imaginary creatures known in heraldic blazon, and is variously represented, sometimes with the horns of an ox and feet of a dragon.

MANTILLA, n. *măn-tĭl'lă* [Sp.]: a sort of scarf or short mantle.

MANTINEA, *mân-tē-nē'a*: famous city of anc. Arcadia, in the Peloponnesus, on the borders of Argolis; on the river Ophis, in a broad plain. M. was famous as the scene of several battles, of which the most important was between the Spartans and the Thebans under Epaminondas, B. C. 362, in which the Spartans were defeated. Its site is now called *Palæopoli*. Some ruins still remain, the principal of which are those of a theatre whose diameter was 240 ft. See Col. Leake's *Travels in the Morea* (Lond. 1830).

MANTIS, n. *măn'-tĭs*, Man'tises, n. plu. *-tĭs-ĕz* [Gr. *mantis*, a prophet]: Linnæan genus of orthopterous insects, which included not only those now constituting

the family *Mantidæ*, but also the *Phasmidæ* (Leaf-insects, Spectre-insects, Walking-stick insects, etc.). All of them are of very remarkable, and some of grotesque, forms. The Mantidæ have a narrow, compressed, and elongated abdomen, and a long thorax, which consists almost entirely of the first segment. The head is triangular, with large eyes, three small stemmatic eyes, and rather long bristle-like antennæ. The wings fold in a fan-like manner, and the wing-covers are long, narrow, and thin. The second and third pair of legs are long and slender, and are used only for locomotion; the first pair are used chiefly as weapons of combat and instruments of prehension, and have the *coxa* unusually long and large; the *femur* also long and large, compressed, and capable of closing on the *coxa*, so that the sharp edges cut like a pair of scissors. The Mantidæ feed on other insects, and remain long fixed in one position, moving their fore-legs in the air to catch prey, which has led to a superstitious regard for them as *praying insects*, and to many foolish notions and legends concerning them. One

Mantis Religiosa.

species (*M. religiosa*) is plentiful in s. France and in Italy; others are frequent in warmer parts of the world. The Mantidæ not only lie in wait for prey, but move about in quest of it, moving slowly, and advancing stealthily on the victim. Many are large insects. Some of the S. American ones are four inches in length. They are all very pugnacious, the combat terminating usually in the decapitation of one of the combatants, or the dividing of its body in some part by the legs of the other; and the victor enjoys his triumph in eating the vanquished. In China and some other parts of the East, these insects are kept in cages, and set to fight with each other for the amusement of the beholders. Some of the Mantidæ (genus *Empusa*) have the forehead produced into a horn.

MANTISSA, n. *măn-tĭs'să* [L. *mantissa*, overmeasure, increase]: the decimal part of a logarithm. Thus the logarithm of 900 being 2·95424, the part ·95424 is the mantissa. MANTIS'SÆ, n. plu. *-sē.*

MANTLE, n. *măn'tl* [L. *mantelium*, a cloak; It. *mantello;* F. *mantille;* Sp. *mantilla;* OF. *mantel*, a cloak; F. *mante*, a covering]: a loose outer garment; a cloak; in the middle ages, a long flowing robe worn over the armor, and fastened by a fibula in front or at the right shoulder. The mantle is an important part of the official insignia of the various orders of knighthood. Ladies of rank wore similar mantles, in many instances decorated with heraldic charges, in which case the mantle bore either the impaled arms of the lady and her husband, or her husband's arms only; examples are seen in monumental effigies. In general, a cover or shade; that which conceals; the outer soft membrane of the body of a mollusk: V. to cover; to disguise; to rush to and overspread the face, as the blood, with a crimson color; to spread out, especially in a graceful or elegant manner; to be expanded; to gather a scum on the surface. MANTLING, imp. *măn'tlĭng:* ADJ. spreading; investing; brought up to the top; fermenting: N. in *her.*, representation of a mantle or any drapery. MANTLED, pp. *măn'tld:* ADJ. covered as with a mantle. MANTLET, n. *măn'tlĕt*, a small mantle. In *mil.*, a kind of iron-plated shutter used as a cover or shelter for men working guns in embrasures, casemates, or port-holes, from the bullets of sharpshooters. The mantlet is usually made to be hoisted up while the gunner takes aim, and then lowered to cover the whole opening except a circular aperture for the muzzle of the cannon. With every increase in the range and precision of small arms, mantlets become more essential for the safety of gunners. Mantlets are made of thick fir, of solid oak planks, or of iron plates, the last being preferable, as the lightest. At Sebastopol, the Russians effectively blocked their embrasures by thick mantlets of plaited rope suspended freely. A mantlet of planks or iron plates, about five ft. high, and occasionally mounted on small wheels, also is used to protect sappers working at the end of a sap, though a rolling gabion is preferred for this purpose by many engineers. *Note.*—When connected with the fireplace *mantel* should be the spelling, and *mantle* when a cloak or covering is signified.

MANTLING, *măn'tlĭng*, or LAMBREQUIN, *lăm'bẽr-kĭn:* heraldic ornament depicted as hanging down from the helmet, and behind the escutcheon. It is considered to represent either the cointise, an ornamental scarf which passed round the body, and over the shoulder; or the military mantle, or robe of estate. When intended for the cointise, it is cut into irregular strips and curls of the most capricious forms, whose contortions are supposed to indicate that it has been torn into that ragged condition in the field of battle. When the M. is treated as a robe of estate, the bearings of the shield are some-

times embroidered on it. A M. adjusted to form a background for the shield and its accessories constitutes an *Achievement of Arms*. In British heraldry, the M. of the sovereign is of gold lined with ermine; that of peers, of crimson velvet lined with ermine. Knights and gentlemen have generally crimson velvet lined with white satin; but sometimes the livery colors (see LIVERY) are adopted instead, as is generally the practice in Continental heraldry.

Mantling.

MANTUA, n. *măn'tū* [F. *manteau*, a cloak—from *mante*, a mantle—from mid L. *mantum*, a short cloak: Sp. *manto*, a mantle]: a lady's gown or cloak. MANTUA-MAKER, a lady's dress or cloak maker.

MANTUA, *măn'tū-a* (Ital. *Mantova*): fortified city of Italy, cap. of the province of M.; anciently cap. of a duchy in Lombardy; 95 m. e.s.e. of Milan, 25 m. s. of Verona; lat. 45° 9′ 34″ n., long. 10° 48′ 1″ e. Pop. (1901) 29,142, comprising a number of Jews, whose commercial influence and social privileges are greater in M. than in any other city of Italy. M. occupies two islands formed by branches of the Mincio, the waters of which surround the city, with the additional defense of swamps or marshy lakes. It is the most strongly fortified town in the kingdom, and its defenses are fitted to accommodate 30,000 to 40,000 soldiers; but, owing to its situation, it is extremely unhealthful—a fact evinced by the pallid faces of the inhabitants. There are five gateways into the city, one of which, *La Porta dei Mulini* is very noticeable. The fortifications of M., including its vast citadel, present such a combination of defensive resources, that its regular investment could be effected only by a numerous army; and its reduction even then would be impracticable, except by famine. It forms one of the four fortresses of the Quadrilateral, which, by the treaty of Villafranca, remained in the hands of Austria. The streets of M. are spacious and regular, but poorly paved; the squares are numerous and fine. Some of the public buildings are splendid, both from the massive grandeur of their proportions, and the novel beauty of their architecture. The inadequate population of M., added to the sombre character of its feudal structures, imparts to the city an air of gloomy decadence, except in the central commercial quarters, and the populous animated *Ghetto* or Jewish quarter, still subject to inclosure. The ancient ducal palace,

or Castello di Corte, a vast, irregular pile of building, was the state residence and fortress of the Gonzagas, by whom it was erected, and now serves as a state prison and for public offices. The adjoining sumptuous edifice, which now comprises the *Palazzo Imperiale*, the *Palazzo Vecchio*, and the *Corte Imperiale*, or Provincial Tribunal, was originally planned and begun by Buonacolsi, feudal lord of M., 1302; it contains 500 rooms, including a magnificent suite of state apartments, whose choicest embellishment consists of the paintings and designs of the great Mantuan artist, Giulio Romano. The cathedral of San Pietro, also designed by G. Romano, contains some fine frescoes. The churches of San Martino and Sant' Egidio are of great antiquity—the former dating from 528, the latter from 568.—The *province* of M. had a high reputation in the time of the Romans. After sharing the fate of the rest of n. Italy, it was seized by the Gonzagas about the commencement of the 14th c. The last duke of the House of Gonzaga died childless at Padua 1708, when M. fell into the hands of Austria. Austria gave it up with other Italian possessions in 1866. The province has 903 sq. m.; pop. (1891) 307,768; (1901) 311,942.

MANU, *mă'nô* [from Sanskrit *man*, to think, literally, the thinking being]: reputed author of the most renowned law-book of the ancient Hindus; likewise of an ancient Kalpa work on Vedic rites. It is doubtful, however, whether both works belong to the same individual, and whether the name M., especially in the case of the author of the law-book, was intended to designate a historical personage; for, in several passages of the Vedas (q.v.), as well as the Mahâbhârata (q.v.), M. is mentioned as the progenitor of the human race; and in the first chapter of the law-book ascribed to him, he declares himself to have been produced by Virâj, an offspring of the Supreme Being, and to have created all this universe. Hindu mythology knows, moreover, a succession of Manus, each of whom created, in his own period, the world anew after it had perished at the end of a mundane age. The word M.—kindred with our '*man*'—belongs therefore, properly speaking, to ancient Hindu mythology, and it was connected with the renowned law-book in order to impart to the latter the sanctity on which its authority rests. This work is not merely a law-book in the European sense of the word, it is likewise a system of cosmogony; it propounds metaphysical doctrines, teaches the art of government, and, among other things, treats of the state of the soul after death. The chief topics of its 12 books are the following: 1. Creation; 2. Education, and the duties of a pupil, or the first order; 3. Marriage, and the duties of a householder, or the second order; 4. Means of subsistence, and private morals; 5. Diet, purification, and the duties of women; 6. The duties of an anchorite and an ascetic, or the duties of the third and fourth orders; 7. Government, and the duties of a king and the military caste; 8. Judicature and law, private and criminal; 9. Continuation of the former, and the duties of the commercial and

Servile castes; 10. Mixed castes, and the duties of the castes in time of distress; 11. Penance and expiation; 12. Transmigration, and final beatitude (see INDIA). The date of the work, formerly stated B.C. 1200, is put by Monier Williams at B.C. 500, and by Max Müller and Burnell at A.D. 500. It was translated by Sir William Jones. See *The Ordinances of Manu*, translated from the Sanskrit, with introduction by Burnell, completed by Hopkins (1886).

MANUAL, a. *man'ū-ăl* [F. *manuel*—from L. *manuālĭs*, used by or with the hand—from *mănus*, the hand: It. *manuale*]: performed, made, or used by the hand: N. a compendium, or a handbook; a small book that may be conveniently handled; service-book of the R. Cath. Chh.; the key-board of an organ or harmonium. MAN'UALLY, ad. *-lĭ*. MANUAL EXERCISE, or MANUAL, in milit. language, systematic exercise with the musket or rifle, in which recruits are drilled, to give them a free use of their limbs, and of the weapon regarded merely as a pike. It comprises the first course of instruction after the rifle has been placed in the learner's hands. MANUAL LABOR, physical employment and with the hands, as distinguished from mental or professional labor. SIGN-MANUAL, the royal signature superscribed at the top of bills, etc.

MANUAL TRAINING: strictly, training of the hand, as in most arts; recently and technically, education of the powers of mind and body, as aided by school practice of the arts, both fine and industrial. Its aim is to 'put the whole boy to school.' As educational, it is distinguished from trade-training (see TRADE SCHOOL), which, by a brief course, seeks to prepare directly for entrance upon a particular handicraft. Manual training may indeed develop incidentally an aptitude and taste that will choose to follow an industrial life; it is hoped that this will often be the result, since school methods have hitherto educated the masses too much away from the labors by which the great majority must live. But the main object is not productive skill. This is true especially in reference to primary and grammar schools, perhaps in somewhat less degree in high schools. Not all trades are equally valuable for the purposes of manual training. Other things being equal, the preference is usually given to those trades which afford greater variety of processes and movements, which are intrinsically interesting to the young, which are capable of arrangement in a graded series of exercises or lessons, which lend themselves most readily to a real correlation with the usual curriculum, which demand greater physical activity, in which art principles are most naturally inculcated, and in which the worker counts most and the tool or machine least. The exercises for the primary school growing out of the simple occupations of the kindergarten include free hand drawing, weaving of colored yarns, splints, raffia, etc.,

into rugs, baskets, etc., making articles of paper and cardboard, and the like; grammar school pupils have simple and then more difficult work in wood, employing the saw, hammer, chisel, plane, and carpenter's bench, with both free hand and mechanical drawing; also cooking, sewing, weaving, modeling in clay; in the high school work is more specialized and a more systematic effort is made toward mastering at least the fundamentals of certain trades, cabinet-making, turning, pattern-making, blacksmithing, molding, founding, and the various processes of the machinist's trade. Here the drawing may become more the handmaid of these trades or it may develop into architectural drafting and graphic mathematics. In the high school grades the girls have more systematic and thorough-going instruction in cooking, sewing, dress-making, millinery, and the housekeeping arts generally. The benefits of manual training are manifold. The student learns neatness, accuracy, method. He learns to plan his work ahead, finding heedlessness to mean waste of both material and time. He learns the difference between honest and dishonest work. He cooperates with his fellows in joint products. He learns to be industrious, productive, useful. He acquires a certain independence and self-reliance based on true knowledge of his own powers. He judges his own work impartially, measuring it by absolute standards. He has a truer understanding of natural forces and processes from his personal contact with them. Moreover he now has a useful occupation for his leisure hours, and his work suggests to him various avenues of future occupation which otherwise might not appeal to him. The reflex influence on the other studies is most valuable. The student's interest in them is quickened, his comprehension of them is made clearer, his appreciation of their value is deepened, for in the shop he makes practical application of the knowledge acquired in the recitation room. Thus school is made more attractive and boys are not so anxious to drop out before their time. Furthermore, the purely physical results are most beneficial—strength, symmetrical development, trained muscles, more perfect co-ordination and control, better health resulting from regular, purposeful, not violent exercise. Finally, manual training dignifies all labor and makes a definite contribution toward a better understanding between laborer and employer.

The movement to introduce manual training into regular school work may be dated from the establishment of the St. Louis Manual Training School by the trustees of Washington University in 1880. Similar schools of secondary grade were soon opened in Baltimore (1883), Chicago (1884), Toledo (1884), Philadelphia (1885). Since then the spread of manual training has been rapid, especially in more recent years. In 1890, 37 city school systems included manual training in the course of in-

struction, while in 1904 in more than two-thirds of the cities of the United States having a population of 8,000 or more manual training was taught in some of the public school grades. Most state normal schools include a manual course; also some colleges. The movement, and the supply of competent teachers, have been greatly aided by the establishment, by act of congress passed in 1862, of agricultural and mechanical colleges, also by polytechnic schools and institutes of technology; and the kindergartens, kitchen schools and reformatory schools have illustrated somewhat the working of the system. Witness also the arts and crafts movement of recent years, which seeks to combine sound artistic and constructive principles in the manufacture of furniture and other useful articles. This has stimulated the manual training movement, which in turn has roused greater interest in the arts and crafts propaganda.

For further information see C. M. Woodward, *Manual, Industrial and Technical Education in the United States,* in the Report of the Commissioner of Education for 1903, Vol. I.; also other writings of the same author, especially *Manual Training in Education* (1898); *Report of Committee on Manual Training,* Boston Board of Education (1902); K. E. Dopp, *The Place of Industries in Elementary Education,* Univ. of Chicago Press (1903); W. A. Baldwin, *Industrial-Social Education* (Springfield, Mass., 1903); Louis Rouillion, *The Economics of Manual Training* (New York 1905); T. M. Balliet, *Manual Training,* in the 59th *Annual Report* of the Massachusetts Board of Education (1896); John Dewey, *The School and Society* (Chicago 1899); *Manual Training Magazine,* Peoria.

MANUCODIA, *măn-ū-cō'dĭ-a:* in ornithology, a group of birds either belonging or closely allied to the *Paradiseidæ,* and peculiar to the Papuan sub-region. The plumage is glossy steel-blue; the outer and middle toes are united for some distance, and there is an extraordinary convolution of the trachea in the males, to which the loud and clear voice of the birds is owing. Mr. Sharpe divides the Manucodia into two genera: Phonygama (q.v.) and Manucodia proper, of which four species are admitted. *Manucodia chalybeata* (*chalybea*), from the northwest, and *M. comriei,* from the southwest of New Guinea; *M. atra,* widely distributed over the Papuan sub-region, and *M. jobiensis,* peculiar to the island whence it derives its specific name.

MANUEL I., COMNENUS, *man'ū-ĕl kŏm-nē'nŭs:* a Byzantine emperor: b. about 1120; succeeded his father, Joannes II., in 1143; died in 1180. The valor which he had displayed against the Turks induced his father to bequeath the crown to him rather than to his elder brother Isaac, who was immediately imprisoned by Axuch, the minister of the deceased emperor. Returning from his campaign in Cilicia, Manuel was received with

enthusiasm at Constantinople, but was at once involved in wars both in the East and the West, which lasted with brief intermissions through his reign. In 1144, he subjected Raymond, the rebellious Latin prince of Antioch. In 1145, he defeated the sultan of Iconium in successive pitched battles. In 1147, he promised his aid to the new crusade headed by Louis VII. of France and Conrad III. of Germany, and though he allowed them a passage through his dominions he gave secret information to the Turks.

In 1148, he began the most important war of his reign with Roger, the Norman king of Sicily, who had taken Corfu and prepared to invade Greece. He formed an alliance with the Venetians, who within a year joined him before the fortress of Corfu, which was surrendered after an obstinate siege. He was prevented from invading Sicily by hostilities of the Servians and Hungarians, instigated by Roger, the former of whom were vanquished in two campaigns, but the latter protracted the war till 1152. In that year he suffered a reverse from the Turks in Cilicia, but his general, John Ducas, gained so great successes in southern Italy that Manuel conceived the project of reuniting the eastern and western empires.

The defeat of Alexis, the successor of John Ducas, by William, the successor of Roger, soon followed; the Sicilian admiral Maius routed the Greek fleet off Negropont, and advanced toward Constantinople; and Manuel therefore accepted an honorable peace in 1155. Those Greek prisoners who were silk-weavers were retained in Italy, and gave origin to the flourishing Italian silk manufactures. In the following years he waged successful wars with Raymond, prince of Antioch, and Az-ed-din, the Turkish sultan. A new war soon broke out with Gejza, king of Hungary, which was terminated by a disastrous defeat of the Hungarians near the present Semlin. In 1176, he experienced a terrible defeat from Az-ed-din in the mountains of Pisidia, and was obliged to sign a disadvantageous peace. By breaking the treaty and renewing the war he obtained honorable terms. Depressed by this disastrous expedition, he never recovered his former military enterprise and ambition. The heavy war taxes levied from his subjects during his reign were often employed in pensioning ministers and men of influence at foreign courts, while his troops went unpaid.

MANUEL II., Palæologus, *pā-lē-ŏl′ō-gŭs:* a Byzantine emperor, born in 1348, succeeded his father Joannes V. in 1391, died in 1425. At the death of his father he fled from the court of the sultan Bajazet, with whom he had been left as a hostage. The consequence was a war with Bajazet, in which Manuel was supported by an army of Hungarians, Germans, and French. The allies, under the command of Sigismund, king of Hungary and afterward emperor of Germany, were defeated at Nicop-

olis in 1396, with the loss of 10,000 men. Constantinople was besieged, and its fall seemed impending, when the conquest of Tamerlane diverted the arms of the sultan. Manuel visited Italy, France, and Germany, vainly seeking assistance from the western princes. In the conflict between the Tartars and the Turks, he acted with diplomatic skill, and secured peace to his empire. He sent ambassadors to the council of Constance with instructions to urge a union of the Latin and Greek churches; but his real object was only to obtain aid from the kingdoms of the West, and to alarm the Turks by the negotiations with those kingdoms.

MANUEL, Don John: Spanish prince and author: b. Escalona, Spain, 1282, May 5; d. 1349. He was a nephew of Alfonso X., and cousin of Sancho IV. His public life was a restless and turbulent one, but his chief claim to remembrance comes from the fact that he was one of the first and one of the best of Spanish prose writers. He wrote in a style of singular simplicity and charm, and few Spanish authors have succeeded so well in giving to their words the calmness, the weight, the richness which come only from long experience and reflection. His principal work that remains is *Libro de Patronio,* more commonly known as *El Conde Lucanor,* which has been translated into the French and German languages.

MANUFACTURE, n. *măn'ū-făk'tūr* [F. *manufacture;* Sp. *manufactura,* manufacture—from L. *mănus,* the hand, and *factūra,* a making—lit., a making by the hand]: the conversion of raw materials by the hand, or by machinery, into useful articles; the articles so made: V. to work raw materials into articles suitable for use by the hand, or by machinery; to make by art or labor; to be occupied in manufactures. Man'ufac'turing, imp.: Adj. pert. to or occupied in manufactures. Man'ufac'tured, pp. *-tūrd:* Adj. made from raw materials into articles for use. Man'ufac'turer, n. *-tūr-er,* one who works raw materials into articles of use. Man'ufac'tory, n. *-tėr-ĭ,* the house or place where goods are made for use: Adj. employed in any manufacture; often contracted into *factory.* See Labor; Machinery, Political Economy of; Factory; Factory Acts; also, Cotton; Linen; Iron; Silk; Woolen and Worsted Manufactures; etc.

MANUFACTURERS, National Association of: an American association organized in Cincinnati in 1895. It had three primary objects, increasing the export trade; influencing state and national legislation; and arbitrating labor disputes. The association maintains a general office in New York city and issues numerous confidential reports and bulletins. The association is opposed to trade-unionism. It publishes *American Industries* (semi-monthly), and *The American Trade Index* (monthly).

MANURE, n. *mă-nūr′* [OF. *manouvrer*, to hold or possess—from F. *main:* L. *mănus*, the hand; F. *ouvrer;* L. *operārī*, to work: OE. *manure*, to occupy or cultivate land]: any matter or substance added to the soil to fertilize it: V. to apply any fertilizing matter to land; to fertilize. MANU′RING, imp.: N. a dressing of manure on land; the act or practice of applying manure to land; in *OE.*, cultivation by manual labor: ADJ. cultivating by manual labor. MANURED′, pp. *-nūrd′*, dressed with manure. MANU′RER, n. *-rėr*, one who applies manure.

MANURE′: any substance used to increase the productiveness of the soil under cultivation or which is capable of promoting the growth of plants. Animal excrement was doubtless the first and for a long period the only substance so used. Observation of the luxuriant growth which appears where ashes are strewn probably led to the early employment of this material, and as man advanced in civilization other things were found to act as food for crops and were utilized for that purpose. Since the beginning of the 19th c. the discoveries of chemists have not only shown how certain substances increase plant growth, but they have also added various articles to the list of valuable manures. Several of these substances are now largely sold, either separately or compounded, and are known under the general name of commercial fertilizers (see FERTILIZERS).

The necessity for the use of M. upon soils used for production of plants arises from the fact that the crops which the farmer takes from the land remove, in varying quantities, but with absolute certainty, the elements of fertility from the soil. Where nature is allowed to carry on its work unmolested there is gradual increase in fertility. The plants which grow upon the land also decay where they grow, and return all the elements which they had taken from the soil, together with valuable material which they had obtained from the air. But under the best possible system of cultivation the elements taken from the soil are not all returned; while under the careless methods often prevalent they are rapidly abstracted. The farmer sells his crops and with them sells certain elements which make his farm productive. He is selling not merely the product of the land, but practically the land itself. He must return, in some form, the mineral elements which the plants have abstracted, or his land will become impoverished. This fact, though of vital importance, was long overlooked and by the great mass of farmers is still inadequately recognized.

In the United States vast quantities of M. are annually wasted. Though not confined to any one section, this evil is more extensive in the west than in the older settled portions of the national domain. In those localities which have but recently been brought under cultivation, and in which the virgin soil has not yet become exhausted, large piles of M. are allowed to accumulate around the barns and are finally removed only on ac-

count of the inconvenience which they cause. Vast quantities of the most valuable farmyard M. have been thrown into rivers because the owners thought their land would be permanently productive without its use. In the older settled states the evil results of this course led to its abandonment and to a very general effort to save this valuable material.

The various kinds of M. differ greatly in constituent elements and in value for the production of crops. The principal elements which make them useful to the farmer are nitrogen, phosphoric acid, and potash. These elements are indispensable to plants, and are likely to become exhausted from the soil much sooner than any of the other substances supplied by the land. The larger the proportion of these elements to its total quantity, the more valuable is the M. And, up to a certain point, the more liberal the quantity of M. applied, the more luxuriant will be the growth of crops.

The only substitutes for the use of M. are fallowing and tillage; and when used in this manner they but imperfectly serve the purpose. They retard but do not prevent the exhaustion of the soil to a point at which it will not produce profitable crops. In fallowing, the coarser particles of the earth which contain elements needed by plants are disintegrated by the action of the elements, and a natural process of recuperation goes on while the land is lying idle. The liberation of plant food which is locked in the soil is still more rapidly effected by tillage. A common proverb asserts that 'tillage is manure,' and in its original meaning it is claimed that the word M. conveyed the idea of tillage. Tillage also makes the soil more recipient of desirable elements from the atmosphere. But as the removal of crops abstracts the elements of fertility from the land, and as neither the fallowing nor tillage adds anything to the soil, but merely renders available the materials which it previously contained, it is evident that something more will be required if large crops are to be produced without impoverishment of the land. Wherever land commands high price, fallowing cannot be adopted as a substitute for M. on account of the great expense involved in allowing the soil to lie unproductive. The great cost of labor will also prevent the general adoption of tillage for that purpose, though it will always prove a valuable auxiliary.

While there is an inevitable waste in the removal of crops from the soil, there is a great difference in the rapidity with which different plants exhaust the land. For, while all plants require the same elements, the different classes use them in different proportions, and some make heavy drafts on the substances with which the soil is not liberally supplied. The sale of grain crops from the farm reduces its fertility much more rapidly than the sale of butter, wool, or meat. In the latter case the products of the land are largely fed to animals, and a considerable portion of the elements of plant food which

the crops contained is returned to the soil in the form of M. If the animals are liberally supplied with grain, and their excrement is carefully saved, the soil can easily be kept productive. This is due to the fact that animals assimilate the carbonaceous elements of their food and use only a very small proportion of its mineral substances; while plants obtain their carbon principally from th air, which always furnishes an abundant quantity, and take their mineral constituents from the soil. And as the richest foods for cattle are also the best foods for plants, it follows that high feeding of animals is one of the surest, as it is also one of the cheapest, means for securing luxuriant crops. The fact of the intimate relation between the feeding of the live stock and the productiveness of the land was observed long before the reason therefor was discovered.

Farmyard M. is what is known as a complete fertilizer. It contains all the elements which need to be added to the soil to promote the growth of plants, but does not always furnish them in the best proportions. Certain crops are benefited by the application to the soil of fertilizers rich in special elements, as potash, or phosphoric acid. Soils sometimes become deficient in only one of the elements required, and are greatly increased in productiveness by the application of ordinary M. supplemented by ashes, or superphosphate, or some other substance containing the required element in a concentrated yet readily available form. The great proportion of the bulk of farmyard M. is, as far as feeding plants is concerned, wholly inert matter. Careful analyses have shown that one ton of mixed animal excrement contains only about seventy-five lbs. of actual plant food. Upon heavy soils, however, bulky M. exerts a mechanical influence which adds somewhat to its efficiency in crop production.

Liquid M. is often wasted. Upon many farms absorbents are used in the form of bedding for animals with a view to retaining it, and in a few cases it is saved in tanks, but in too many instances no effort is made to secure it, though in equal quantities it is much more valuable than solid excrement. The latter is often injured by undue fermentation and by being leached by rains. In the older settled portions of the country increased attention is being given to adding to the M. supply by the use of straw and other valuable substances, and by composting with muck or some other absorbent material.

In addition to the substances which contain plant food in considerable quantities there is a class of materials, e.g., lime, salt, and plaster, which though supplying but little matter directly to the crops are very efficient in liberating the elements of fertility which are locked up in the soil. Lime, in particular, acts quickly upon the organic matter which the land contains. It is sometimes used to excess, and causes practical exhaustion of the soil.

The value of the returns from M. depend largely upon

the manner of its application and the degree of tillage which the crops receive. The practice, once very common, of plowing in the M. is gradually being superseded by the better method of spreading upon the surface and covering but slightly, if at all. Drawing from the yards is also often done in winter instead of in the spring and fall, as was formerly the custom. When spread upon grass land, the M. should be finely pulverized, and when used upon plowed land it should be not only made fine but also be equally distributed and thoroughly incorporated with the soil.

GREEN MANURE.—The use of green crops for M. has been practiced to a limited extent for a long period. It was known to the ancient Greeks and Romans, but has never been generally adopted in any age or land. In this country many efforts have been made to render it popular, but the benefits which it confers are offset by too many disadvantages to admit of its universal acceptance.

The plants principally used for green M. are clover, buckwheat, millet, and the cow pea. The first is used in the north more than all the others combined, and is the typical plant for fertilizing the land. The last is grown only at the south, and in that section is as popular as is clover at the north. Clover is frequently but improperly called an 'enriching' crop. Its roots are large and long. They penetrate the soil to a great depth and bring nearer the surface mineral elements which were already in the land, but which were beyond the reach of the roots of the ordinary grain crops. The clover plants also secure nitrogenous elements to some extent from the soil and the atmosphere, but their main office as fertilizer is not in adding to the stock of plant food already on hand, but in rendering it available for the use of crops which have smaller roots and are more delicate feeders.

When grown for hay and sold from the farm, clover proves an exhausting crop. If fed to cattle and if the manure obtained therefrom is returned to the land, it proves of great value. When grown merely as M., the clover is usually plowed into the ground in the spring, and corn or potatoes are planted at once. The decay of the roots, which contain large stores of mineral matter which they have brought from the lower strata of the soil, supplies the plants with valuable nutriment, and often produces large yields. Sometimes, after the clover is turned in, the land lies idle until fall, when wheat is sown, but as it involves a loss of use of the land for a whole season, this is an expensive method. When grown only partially as M., the first crop is taken in June for hay and the second is plowed under in Aug. to fertilize the land for the wheat, which is put in during the following month. As the clover when cured is valuable food for cattle; and as they use mainly the portions not specially needed by plants while the mineral elements essential to the growth of crops are almost wholly excreted, it appears to be more profitable to grow and

use it for hay than to plow it into the land with practical loss of the portion which the animals would assimilate, and on which they would thrive.

MANUS, n. *mā'nŭs* [L. *mănus*, the hand]: the hand of the higher vertebrates.

MANUSCRIPT, n. *măn'ū-skrĭpt* [L. *mănū*, with the hand; *scriptus*, written: F. *manuscrit*]: writings of any kind by the hand, on paper, or on other material; contracted into MS.; plu. MSS. All the existing ancient manuscripts are written on parchment or on paper. The paper is sometimes Egyptian (prepared from the real papyrus shrub), sometimes cotton or silk paper (*charta bombycina*); sometimes linen paper. The earliest mention of quill pens is in the seventh century. The most common ink is the black, which is very old. The oldest, however, was not mixed with vitriol, but generally consisted of soot, lamp-black, burned ivory, pulverized charcoal, etc. Red ink is also found in ancient manuscripts. More rarely, but still quite frequently, blue ink is found; yet more rarely green and yellow. Gold and silver were also used for writing either whole manuscripts or for adorning the initial letters of books.

MANUSCRIPTS, Greek and Latin: under manuscripts we include writings drawn or written with ink upon skins of animals, on prepared vellum (parchment), on papyrus, or on other kinds of paper, as distinguished from inscriptions (see Epigraphy) graven upon more durable materials, such as metal, wood, terra-cotta, etc.

Materials.—As the earliest material the Greeks apparently used rough-dressed skins of goats or sheep (*διφθέραι*), cf. Herodotus V. 58. But the earliest Greek MSS. that we possess (4th and 3d centuries B.C.) are written upon the Egyptian papyrus or byblos. In Egypt itself this material had been used from remote antiquity, one roll being extant from 2,500 B.C. The pith (probably) of the papyrus stalk was cut lengthwise into thin strips and as wide as possible. The side intended for the writing was called *recto*, the lines running with the grain. In certain papyrus receipts, however (Goodspeed, *Papyrus from Karanis*, 1900), some 60 have the writing running across the fibres, the scribe preferring thus to obtain a wider page. The other side was called *verso*. The papyrus, imported from Egypt, supplanted the use of skins, but in the 2d century B.C. the King of Pergamum, estopped from its importation, as it is said, by the jealousy of the Ptolemies, brought the skins again into use by greatly improving the manner of dressing them. They were hence called *pergamenta* (*parchment*), or, in Latin, *vellum*. Vellum became rapidly popular, being far more durable than the brittle papyrus and lending itself to the writing on both sides, when the book-form supplanted the roll. But papyrus long continued in use even after vellum became the standard material in the Christian writings and for other large books.

MANUSCRIPTS.

When papyrus was passing from use the (so-called) 'cotton' paper was imported by the Arabs from the Orient into Europe and was in use as early as the 12th century. By the end of the 14th it began to rival vellum. In the middle ages it was called *charta bombycina; Damascena, xylina*, etc. For writing on papyrus the reed (*calamus*) was used. This also was imported from Egypt. The flexible pen seems to have been invented for use on vellum. Various inks were used: the liquid of the cuttle-fish; an infusion of soot and gum; gall-apples and metallic infusions.

Form.—The old form was the roll, Greek *biblos* (from *βύβλος*), in Latin properly *volumen*, though the name *liber* (*bark*-book) was transferred to the papyrus rolls. The Greeks also used *tomos* (*τόμος*, i.e., a cutting of papyrus). Hence English: *Bible, volume* (*library*), *tome*. The scroll was rolled on a stick, the left hand rolling up the portion read, the right unrolling. The writing was in columns, the lines themselves running parallel to the length of the roll and at right angles to the stick.

The Codex was so called from a block of wood split or sawn into thin leaves. Two or more of these were used by the ancients to make their wax-tablets (*δέλτοι, pugillares, tabellæ*). The development of the wax tablets may be illustrated by the secret message written on the wood beneath the wax in the Gorgo story, Herod. vii. 239. The vellum books, following this arrangement, were called *codices*. The terms *βίβλος, βιβλίον, liber*, were transferred from the rolls to the codices. The book-form, so obviously superior for ready reference, for convenience in storing, and for durability, was soon preferred for large works of reference. The text being written at first without separation of words might be written continuously across the page as was done in poetical works, while in others the use of columns was retained from the papyrus rolls. The *Codex Sinaiticus*, when opened, shows on the two pages 8 columns, 4 on each page.

Palimpsests.—(Greek: 'scraped again'.) Writing material, being valuable, was often used a second, or, rarely, a third time, the ink in the case of papyri being removed with a sponge or, from parchment, scraped off and the surface polished with pumice. The monks often effaced a 'profane' MS. to receive ecclesiastical writings, sometimes *vice versa*. By chemical re-agents in the case of metallic ink the first writing may sometimes be called back. For reasons of economy the rolls were also often turned over and new writing was placed upon the *verso* side. This might be of any sort from mere memoranda to a transcript of some valuable work. Thus an oration of Hyperides is written on the *verso* of a papyrus scroll, while the *recto* had been used for a Greek horoscope. Similarly, Aristotle's *Constitution of Athens* was found written on the *verso* side of some disused accounts of a

Roman bailiff of 78-79 A.D., thus approximately dating this important MS.

Styles of Writing.—For shapes of letters, abbreviations, punctuation, orthography, dating, etc., see PALÆOGRAPHY. The main styles to be noted are the Majuscule (including the (Greek) Literary or Book-hand, the Capital and Uncial writing); the Cursive; and the Minuscule.

GREEK MANUSCRIPTS.—In the earliest Greek MSS. the Majuscule Literary or Book-hand was usually employed for works of literature and the Cursive hand may be assumed as side by side with it for every-day records. For although the earliest cursive papyrus found is of the 3d century B.C., while that of the Book-hand is of the preceding century, yet the fluent, matured style of both must presuppose a long development. Ready intercourse by writing among the Greeks may be assumed for at least as early as the 7th century B.C.

The Literary or Book-hand recalls the inscription type (see EPIGRAPHY). The words are not separated. The letters are capitals; separate; upright and with the minimum of curved lines as would be natural in cutting material like wood, stone or bronze. The developed Majuscule or Uncial (the so-called 'inch' sized) show relatively greater roundness, inclination, and inequality in the size of the letters. For Greek it is better to ignore the distinction between Uncial and Capital writing.

The Cursive or *running* hand is, in the oldest examples, close to the Uncial writing. The words are often separated, but the letters of the words themselves are, as the name indicates, mostly connected. Early specimens of the Cursive, as of the Uncial, are rapidly accumulating from the finds in Egypt. The change and disintegration of the writing may now, beginning with the 3d century B.C., be followed through all its stages. The Minuscule writing, which suddenly makes its appearance in the 9th century, is really the Cursive hand written with care, the letters again becoming upright. The Uncial and Cursive, as such, are now given up.

A few of the most important Greek MSS. are the following. The earliest is the papyrus roll of the poet Timotheos (lost to the modern world till 1902), probably written about 350 B.C., in the time of Demosthenes. It is in the Literary or Book-hand Majuscule. Two fragments of the 3d century (found in 1891) are *The Artemisia* papyrus and one from the *Phædo* of Plato. They are of a similar type.

The charred Herculaneum rolls are important both for Greek and Latin, as they are all necessarily older than the eruption of Vesuvius in 79 after Christ. The letters are isolated; the writing very regular.

An Uncial papyrus roll, published 1892, contains 700 lines of the lost poet Herodas, written in first century of our era.

MANUSCRIPTS.

The new (published 1907) find of Menander is a papyrus roll written in a regular Uncial hand, attributed to the 2d or 3d century after Christ.

For earliest Cursive we have the papyrus fragment of the *Will of Demetrius*, dated 237 B.C. The lost *Constitution of Athens* by Aristotle was discovered in 1890. It is written on the *verso* of four papyrus rolls and is dated by the writing on the *recto* (see above) as written about 100 B.C. There are four hand-writings, three of them semi-Cursive, with many abbreviations; the remaining hand is Uncial, with no contractions.

Among Uncials on vellum the most conspicuous are the three great MSS. of the Bible: *Codex Sinaiticus*, of the 4th century after Christ; *Codex Vaticanus*, of 4th or early 5th; *Codex Alexandrinus*, of the 5th century. For other Uncials see Thompson's *Paleography*.

Among Minuscule MSS. the oldest are of the 9th century, 12 being *dated;* for the 10th century, 50 are *dated* and these increase in number, except in the 12th century, down to the 15th century. Of some 1,000 extant Greek MSS. the larger part are in Minuscule.

Facsimile plates are published for Timotheus; Bacchylides; Aristotle's *Constitution of Athens;* and are promised for the Menander papyrus. There are also various publications of the more fragmentary Egyptian finds. For a selection of 30 facsimiles ranging from the 2d or 3d century B.C. to the 14th century of our era, see Wattenbach: *Scripturæ Græcæ Specimina* (2d ed. Berlin, 1883).

LATIN MANUSCRIPTS.—The writings of the earliest manuscripts which are extant are in Majuscule letters, i.e., capitals which are subdivided into square capitals and rustic capitals and uncials. Square capitals are as a rule of the same height and the angles of the letters usually are right angles. Rustic capitals are less formal; they do not show the same distinction between the heavy and the light lines and they do not add the light strokes to the tops and bases of the letters as do the square capitals. Uncial writing approaches nearer to the Minuscule in character, and in contrast to writing in capitals may be called a round hand. The Minuscule hand was a later development, and in this hand are the great majority of manuscripts which have come down to us.

Only meagre specimens of manuscripts in square capitals have survived. A few leaves from two Virgil manuscripts have come down to us and these are usually attributed to the 4th century. The rustic capitals are used in the earliest extant manuscripts, i.e., the papyrus fragments found in Herculaneum, which was destroyed in the year 79 of our era. There is great diversity of opinion in regard to the date of the earliest vellum manuscripts in rustic capitals. To none of these can a

date be assigned with any degree of certainty before the end of the 5th century. There is in the Medicean Virgil a note at the end of the manuscript which tells us that it was read and corrected by the consul Asterius. He held office in the year 494. Undoubtedly some of our manuscripts belong to a period much earlier. The palimpsest fragments of the Verrine orations of Cicero are probably the earliest. It is not older than the 3d century, and it is usually assigned to the 4th. To this century probably also belong three very famous manuscripts of Virgil which are preserved in the Vatican. The fact that so many of the manuscripts in capitals are copies of Virgil implies that this elaborate style of writing was used for the most famous Roman poet and that these manuscripts were volumes 'de luxe.'

ILLUMINATED MANUSCRIPTS.—The beauty of manuscripts was largely dependent on the use of red ink. This was employed in headings and in case of letters beginning a sentence or line. The red lighted up the page, and this is the meaning of the word 'illuminated' as applied to manuscripts. The red, called in Latin *minium*, was so important a factor in the decoration of manuscripts that the painter was called miniator and the painting a miniature. The term came in time to be used of any small painting. Illuminated manuscripts appear to have been not uncommon in the last days of the Roman republic. Pliny the Elder tells us that manuscripts in the library of M. Varro were illustrated with some 700 portraits of famous men. The Romans evidently derived the art of miniature painting from the Greeks. One of the best illustrations of an illuminated manuscript is obtained from the fragments of Homer's *Iliad* preserved in Milan. This manuscript is of the 4th century and contains 58 miniature portraits. Many of these are of great beauty and evidently go back to a Greek original. The earliest example of an illuminated Latin manuscript which we possess is the Vatican Virgil of the 4th century. There are 50 illustrations. The style of the painting and the costumes represented belong to the 4th century. In the flesh tones and in their general character these pictures remind us of the Pompeian wall paintings. We have three Terence manuscripts of the 9th century which are illuminated, and these are evidently copies of a much earlier illuminated manuscript. Although these copies are somewhat rude in execution we may still obtain some idea of the beauty and effectiveness of the originals. There are many illuminated manuscripts of the 11th and 12th centuries, and from these we may learn much of the general scheme of decoration and of the character of the art employed in classical manuscripts. The mediæval copyists were very conservative and held for centuries to traditional methods and traditional forms.

Manuscripts were sometimes written in burnished gold on purple vellum. These were first produced only for imperial use, but at a later time the gospels were also thus written. The best general summary of the subject in English is E. M. Thompson's *Handbook of Greek and Latin Paleography* (New York 1893). For specimen facsimiles see E. Chatelain, *Paléographie des Classiques Latins* (Paris 1884), etc.

MANUSCRIPTS, Illumination of: art of painting manuscripts with miniatures and ornaments, an art of the most remote antiquity. The Egyptian papyri of the ritualistic class, as old as the 18th dynasty, are ornamented with vignettes or miniatures, attached to the chapters, either designed in black outlines, or painted in primary colors in tempera. Except these papyri, no other MSS. of antiquity were, strictly speaking, illuminated; the Greek and Roman MSS. of the 1st c. that have reached the present day being written only. Pliny, indeed, mentions from Varro that authors had their portraits painted on their works, and mentions a biographical work, with numerous portraits introduced, but all such have disappeared in the wreck of ages; the oldest illuminated MSS. which have survived being the *Dioscorides* of Vienna, and the *Virgil* of the Vatican, both of the 4th c., and ornamented with vignettes or pictures in a Byzantine style of art. St. Jerome, indeed, in the same century, complains of the abuse of the practice, as shown by filling up books with capital letters of preposterous size; but the MSS. of this and the subsequent century are ornamented with rubrics only, as evidenced by the *Codex Alexandrinus* and other manuscripts. Probably the art of illumination was derived from rubrics, as the emperors in the 5th c., commencing with Leo (470), signed in this color, like the Chinese, and this 'vermilion reply,' adopted by Charles the Bold in the 9th, continued till the 13th c. The art of illuminating MSS. with gold and silver letters is supposed to have been derived from Egypt, but it is remarkable that no papyrus has any gold or silver introduced into it. The artists who painted in gold, called *Chrysographi,* are mentioned as early as the 2d c. One of the oldest MSS. of this style is the *Codex Argenteus* of Ulphilas (360); and the charter of King Edgar (966), six centuries later, shows the use of these letters. Gold letters seem to have been used in the East during the 12th and 13th c. At an early period, the use of illuminated or decorated initial letters commenced, which is to be distinguished from the illuminated or painted pages placed at the head of Byzantine MSS. Originally, they were not larger or more colored than the text; but the Syriac MSS. of the 7th c. have them with a pattern or border: and they go on increasing in size and splendor from the 8th to the 11th c., when large initial letters, sometimes decorated with little pictures or miniatures,

came into fashion in the Greek and Latin MSS. The subjects of the figures mixed with the Arabesque ornaments often referred to the texts; warriors and warlike groups of figures being introduced when the text referred to war; symbolical representations of hell, where the chapters following treated on that region. These initial letters soon increased to a great size, being from 2 to 24 inches long; they were used most in the 8th and 9th c., but continued till the 12th c., and degenerated in the 16th to the last decadence of art—the grotesque. The art which flourished in the Eastern and Western Empires passed over to Ireland, and there gave rise to a separate school or kind of illumination. This style, which consists in a regular series of interlaced ribbon ornaments, often terminating in the heads of gryphons and other animals, seems to have been derived from the later patterns of Byzantine art, seen on mosaics, mural paintings, and other objects. Some, indeed, have thought that they are of oriental origin. The so-called Durham Book, in the British Museum, of the 8th c. is a splendid example of the school established in Holy Island by St. Aidan, and in Kent by St. Dunstan, before the end of the 6th c. A remarkable MS. of the 6th c. is the Book of Kells (q.v.), at Dublin. The Scriptorium of the monastery at Hyde, near Winchester, was famous at this period for its illuminations; and the celebrated St. Dunstan of Glastonbury applied in early youth his talents to this art. The minute size and number of interlacements of the *Book of Kells*, at Dublin, is quite wonderful; while the *Benedictional* of Chatsworth, executed by one Godemann of Hyde for Ethelwold, Bp. of Winchester (1100), exhibits a bold style of art and ornament. Separate schools prevailed in the 11th c., the Greek or Byzantine MSS. of the period exhibiting a fine style of ornament derived from the Byzantine school; while the Latin MSS. of the period are distinguished by the use of a light blue and green in titles and pictures. While, however, the ornaments of the Byzantine and Latin schools were of a more purely architectural character, and the Anglo-Hibernian, Saxon, and even Franco-Gallic MSS. of Charlemagne and his successors exhibit a union of Roman and Gaulish treatment, a new kind of work was arising in the 10th c. in England, called the Opus Anglicum, resembling more in character the ornaments of Gothic architecture, a remarkable specimen of which is seen in the Gospels made for Knut or Canute. During the 12th c. there arose a new style, distinguished by profusion of ornamentation, intricate mode of illumination, and abundant use of gold and silver. The taste was false, but the art had become more special, blank spaces being left for the limners to fill in. In the 13th c., the art still more deteriorated in w. Europe—long-tailed illuminated initial letters were introduced; the background was often of gold, on which the ornaments and subjects were colored in a style resembling oil-painting, 1190–1230; manuals were then prepared to instruct the limner, and the art was formalized.

The Gothic style of ornament of this age had superseded the Roman or Byzantine of previous centuries. In the 14th c., the art greatly improved; the border or ornament running all round the page was introduced, and the ornaments were interpolated and enriched with miniature pictures, even by celebrated artists, as Niccolo Pisano, Cimabue, Giotto, in Italy. Few volumes, however, were illuminated till after the reign of Edward I., when the art took a further development; grotesque figures were introduced, and are alluded to by writers of the period. In the 15th c., continuous borders and fine miniature pictures were in use, and toward the end of the century, celebrated works of this nature were produced by Giulio Clovio in Italy, and Lucas van Leyden in Flanders, the Van Eycks, and Memling or Hemlink; medallions of exquisite style and finish were inserted in the border. Of this age, the most beautiful known specimen is the *Book of Hours* of Anne of Brittany, wife of Louis XII., with borders of natural plants on a gold ground. The Italian art of the same age was symmetrical rather than picturesque and naturalistic, but on solid backgrounds; the ornaments, though resembling those of preceding centuries, are distinguished by the introduction of miniatures. In the 16th c., in the reign of Louis XIV., the art became extinct, ending with a style of painting called *camaïeu gris*, a kind of monochrome, in which the lights are white or gold, and shaded so as to emulate bas-reliefs. Among oriental nations, the Persians, Hindus, and Chinese have illuminated MSS. of great beauty, none of which, however, can compete with those of the Western nations in antiquity. For beauty of design, some of the Arab MSS. are charming, but their antiquity does not reach beyond the 13th c. The Chinese Buddhists have also illuminated classics, or religious books of their sect, one of which, the *Diamond Book* as it is called, in the British Museum, has a text splendidly printed in silver and gold letters on a blue ground; and the vignettes charmingly painted in tempera, on macerated leaves of the *Ficus Indica*.

Humphrey, H. Noel, *Art of Illumination* (12mo, Lond. 1849); Shaw's *Illuminated Letters*. (fol. 1828); Bradley, J. W., *Manual of Illumination* (12mo, Lond. 1860).

MANUTIUS, *ma-nū′shĭ-ŭs*, ALDUS; or MANUZIO ALDO (*Aldo*, diminutive of *Theobaldo*, his baptismal name): great printer and improver of the art of printing: 1450–1515; b. Sermoneta, in the Papal States. His name, in its Italian form, is spelled in three different ways by himself or his descendants, viz., Manuzio, Manuzzi, and Manucci; while from his patron, Alberto Pio, Lord of Carpi, he took also the name Pio, and after 1503, always designates himself Aldo Pio Manutio Romano. He is often called Aldus *the Elder*. He established a printing press at Venice 1490—though the first book bearing a date has 1494 (see ALDINE EDITIONS). See *Didot, Alde Manuce* (1875).—His son PAULUS M., or Paulo Manuzio (1512–74), conducted his father's business after 1533.—The

son of Paulus, ALDUS M., junior, or Aldo Manuzio, junior (1547–97), succeeded to the business, but with less original merit.—The last two were notable authors.

MANX, n. *măngks:* the old language of the Island of Man: ADJ. belonging to the Isle of Man, as *Manx* cat.

MANX CAT, n. *măngks:* variety of the domestic cat (*Felis domestica*), native of the Isle of Man, distinguished by having no tail or only a rudimentary one. It is now rare.

MANY, a. *mĕn′ĭ* [Goth. *manags*, much; *managei*, a multitude: Dut. *menig;* Ger. *mancher;* F. *maint*, many: comp. Gael. *minig;* W. *mynych*, often, frequent]: consisting of a great number; numerous; not a few; used as a common prefix, as *many*-headed, *many*fold: N. a great number of individuals; a multitude; the people. MANY-TIMES, often. TOO MANY, more than enough; overpowerful. THE MANY, the greater number; the crowd; the people.—SYN. of 'many, a.': frequent; manifold; various; multiplied; sundry; divers.

MANYPLIES, n. plu. *mĕn′ĭ-plīz*, in *Scot.*, MONIPLIES, n. plu. *mŭn′ĭ-plīz* [*many;* L. *plicō*, I fold]: the popular name for the omasum, or third stomach of ruminants, so named from its numerous flaps or folds.

MANZANILLO, *mân-sâ-nēl′yō* or *mân-thâ-nēl′yō:* seaport on the s.e. coast of Cuba, having an excellent harbor, and exporting sugar, tobacco, and timber. Pop. 5,643.

MANZONI, *mân-dzō′nē*, ALESSANDRO FRANCESCO TOMMASO ANTONIO: Italian novelist: 1785, Mar. 7—1873, May 22; b. Milan; son of Count Manzoni, and of the daughter of Marquis Beccaria. From youth, his literary predilections gave token of his later mental development. In 1806, at the age of 21, his essay on poetry, *Versi Sciolti*, was inspired by the death of a friend; and 1810 his sacred lyrics called forth general admiration. Several tragedies, written with much spirit and originality, attracted notice not only in Italy, but also in France and Germany; and foremost amid his warm admirers and favorable critics was Goëthe. The work, however, by which M. attained European fame is his historical novel, *I Promessi Sposi*—a Milanese story of the 17th c., translated into German, English, French, and other tongues—(3 vols. Milan 1827), by which a new era may be said to have been created in the fictitious literature of Italy. The tale abounds in interesting sketches of national and local Italian customs and modes of life, portrayed with unflagging spirit and humor; while various grave historical events are narrated with force and grandeur of style, especially the episode of the plague in Milan. M.'s ode to Napoleon (1823) is noble in thought and diction. The poet's later years were spent in strict and devout seclusion, the free tendency of his early opinions having been succeeded by a stringent conformity to the doctrines of Rome. A complete edition of his works, 5 vols., was published by Tommaseo, Florence (1828–9).

MAOR, *mâr:* royal official who, in the early periods of Scottish history, was placed over crown or fiscal lands, and in later times became the Thane. A similar official, the Maer, existed in Wales.

MAORI, n. *ma-ō′rĭ* or *mow′rĭ* [New Zealand word, meaning *indigenous*]: one of the native inhabitants of New Zealand: ADJ. belonging to.

MAORIES, *ma-ō′rĭz* or *mow′rĭz:* name by which the inhabitants of New Zealand call themselves, and that by which they are now usually designated by ethnologists. The M., in common with the natives generally of Polynesia, belong to the Malay race or family of mankind. Though calling themselves indigenous, the M. have a tradition that their ancestors migrated to the present seat of the nation from the island of Hawaiki about 500 years ago. They came in seven canoes, which had outriggers, to prevent foundering; these vessels were called Amatiatia, being very different from those subsequently used by them, which were much simpler in construction, and named Wakka. The first of these canoes that touched at New Zealand was named Arawa, and this brought over the first settlers from whom the M. are descended. If any faith is to be attached to this tradition, Hawaiki was, probably, the same as Hawaii, the principal of the Sandwich Islands, about 4,000 m. n.e. of New Zealand. Some, however, suppose that it may have been Savaii, one of the Samoan or Navigators' Islands, a group not half as far away. The tradition says nothing of any indigenous population found in New Zealand at the arrival of these immigrants. Many writers, however, incline to the belief that it was previously inhabited by a darker race, somewhat akin to the Papuas of New Guinea, sometimes called Negritos and Pelagian negroes. If the two races, in process of time, intermingled, this might account, in some measure, for the differences apparent between the M. and the Tahitians, Samoans, Sandwich Islanders, and other natives of the Pacific. But whether of pure or mixed race, all testimony combines in representing the M. as a nation standing very high in the scale of physical humanity. The skin of the Maori is in general of olive-brown color, but there are some in whom the shade is much lighter, while in others it is darker. In stature they almost equal Englishmen, and have powerful muscular development. They have well-shaped, intellectual heads, and their features, when not tatooed, might almost be taken for European. Few have beards or whiskers, it being an immemorial custom with them to pluck out the hair on the face with pipi shells. On the head, the majority have long black hair, with a slight wave in it; but with some it is of reddish tinge, and some have the hair slightly frizzled. Their eyes are large, their lips thick, and their teeth, unlike those of most savage nations, are large and irregular. The women are of less stature than the men in proportion, and are in other respects inferior to them, perhaps from their marrying too young and having to perform too

much of the drudgery of life. Some of the women, however, are represented as being delicately molded, with long eyelashes, pleasing features, and a plaintive, pathetic voice, which makes them highly interesting. Both sexes used to practice tattooing, a custom which has been almost abandoned since the conversion of the M. to Christianity. It was a painful operation, performed with a hammer and saw-like chisel. The punctures were stained with vegetable dyes, and the patterns, which extended over the face, hips, thighs, etc., represented ornamental scrolls and figures, supposed to denote the rank of the individual wearing them. The women were but slightly tattooed, with a few lines on the lips, chin, and occasionally other parts of the body. The priests were the principal operators, and during the process, ancient songs were sung, to encourage, divert the attention, and increase the patience of the sufferers. This tattooing was supposed to make the Maori youth both more terrible in the eyes of his enemies, and more acceptable in those of his mistress. Another remarkable custom among the M. was that of the *taboo*, by which the priest could make certain persons and things sacred and inviolate. This was partly a religious and partly a political ordinance, and was so much respected, that even in war-time hostile tribes left unharmed all persons and things thus protected by the *taboo* of the opposite side. Cannibalism, heinous and abominable, practiced so lately as within the last half century, was universal among the M. before their conversion to Christianity. The last instance of it occurred 1843. 'Now, however,' says Dr. Scherzer (*Voyage of the Novara*), 'any allusion to this revolting practice is very painful to the New Zealander, as reminding him of his former low position in the scale of nations. Every time that we endeavored to make any inquiry of the natives respecting this custom, they withdrew with an ashamed look. In like manner, dogs' flesh has ceased to be an article of food, ever since the introduction of pork by Captain Cook. Formerly, the native or Maori dog, which at present is very scarce, was eaten on certain occasions, while its blood was conspicuous in Maori pharmacy.' Infanticide, which also prevailed among them in their days of heathenism, is now universally abolished, likewise slavery and polygamy. The M. generally marry very young, and instances are known of females among them becoming mothers even at the age of eleven years. Their marriages, however, are not very productive, three in a family being considered a good average, and many of these dying in their first year. It is difficult to account for this, seeing that the M. of the present day are not addicted to intemperance, like other half-civilized tribes. The wars of the M. were formerly carried on with spears and clubs of various kinds, manufactured from stone and wood. Their most remarkable weapon was a spear of nephrite, which descended among the principal chiefs from father to son, and was regarded as a kind of sceptre,

and even a sacred object. It was called *Merimeri*, 'the fire of the gods,' and was sometimes used for scalping prisoners. There are other weapons of nephrite in use among the M.; they are much sought after, and very costly. The use of firearms is now, however, general among the M., and that they are adroit marksmen has been made apparent in their contests with English troops. The language of the M., like the Polynesian languages generally, belongs to the Malay family. Its alphabet comprises only 14 letters, viz., A, E, H, I, K, M, N, O, P, R, T, U, W, and Ng. Seven moderately distinct dialects are spoken among them. The language is represented as rich and sonorous, well adapted for poetical expression, especially of the lyric kind. The M. have an abundance of metrical proverbs, legends, and traditions, of which a collection has been made by Sir George Grey. They are passionately attached to music and song. More than five-sixths of the M. are now converted to Christianity. Of these, such as live within the English settlements are becoming gradually assimilated to British colonists, mostly wearing the European dress, etc., while those further removed are content with the blanket, which has superseded the native cloth. They generally practice agriculture, but will not work very hard. They are good sailors and fishermen, and, indeed, more than a hundred coasting vessels of good size are now the property of natives. The M., however, as a nation, though ready to imitate European customs, are not quite contented with British colonial rule. In 1861, hostilities commenced between the M. and the British, which terminated in favor of the latter the following year. In 1863, war broke out again, the M. having conspired to expel the British troops. In 1868, they massacred many of the settlers, and resisted, to desperation, the troops sent to quell them. Since 1869 they have been perfectly peaceful. In 1901 the M. numbered 43,143.

MAORMOR, *mâr'mōr:* the old equivalent of the earl in Scotland, like the Maor (q.v.), but placed over an earldom or county instead of a barony, acting as royal deputy or steward over the territory of which he had at a still earlier period been the independent lord, and probably retaining to himself the third part of the royal revenues and prerogatives. Prior to the introduction of feudalism, Scotland seems in theory to have been subdivided into maormordoms, each made up of the M.'s portion and the king's, in later language, the earldom and the regality, over both of which the M. exercised his office, though the former was, in a special sense, his own. Practically, however, in certain of these districts the king retained both maormordom and regality in his own hands, and the maors held their thanages directly of the sovereign, without the intervention of a maormor. As the feudal system extended, the maormors were converted into earls, who were confined within the limits of their own districts, the Earl of Fife alone retaining the privilege of exacting his rights over the whole province.

MAP, n. *măp* [Sp. *mapa*, a map; L. *mappa*, a table-napkin: It. *mappa:* F. *mappe*]: picture of the earth, or a part of it, on a flat surface—usually on paper or cloth: V. to draw or delineate any portion of land. MAP'PING, imp.: N. the art or practice of planning or drawing maps. MAPPED, pp. *măpt*. *Note.*—The first maps were maps of the world, and called in OE. *mappe-mounde*, a F. form of L. *mappa-mundi*, map of the world.

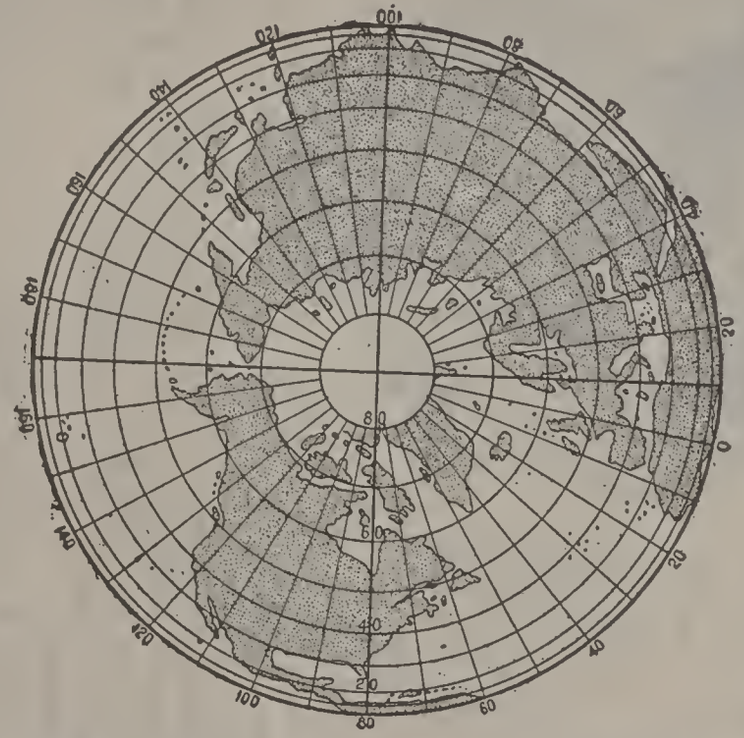
MAPS: a map is a shorthand representation of geographical information, a delineation of the geographical features of a certain territory in their topographical relations. Different kinds of geographical information are shown by different maps. A map of the United States which showed only the rivers would be a desirable addition to the schoolroom series. The usual school map emphasizes political divisions; another kind of school maps emphasizes physical features; we have maps to show weather, population, industries, centres and routes of commerce, railways, elevations, rainfall, winds, soils and minerals, vegetables, animals, historical periods, and so on, each giving some additional features but bringing out mainly its special purpose.

In its essence a map is only a diagram, one of the simplest forms of drawing, showing the outline of a given area and the relative position within it of certain geographical objects. Such maps have been used from the earliest times of which we have pictorial record; untrained and illiterate persons often make rough sketches of this kind that answer every purpose. By means of a plane-table, a compass, a sighting ruler, and a tape-line accurate and minute maps of a small region may be drawn. But when any considerable area is to be mapped a serious difficulty arises because the surface of the earth is spherical and can be only approximately represented upon a plane. Thus Jerusalem is farther south than New York city, and yet upon a globe, if we place one end of a string upon New York and the other upon Jerusalem, we see that a bird flying in an air line from New York to Jerusalem would set out almost to the northeast.

To overcome the difficulties of representing a spherical surface upon a plane many expedients have been devised.

Mercator's Projection.

Mercator's projection is the simplest. It is a cylindrical projection by which the meridians are drawn parallel to each other, and the parallels of latitude are straight lines whose distance from each other increases with their distance



Orthographic Projection on the Plane of the Equator.

Orthographic Projection on the Plane of a Meridian.

from the equator, so that everywhere the degrees of latitude and of longitude have to each other the same ratio as on the sphere itself. This greatly increases relative areas as regions are farther from the equator. Iceland, 40,450 square miles, seeming as large as Borneo, 290,000. But it is the only map which gives directions perfectly, and has been used at sea since 1600.

Two modifications of Mercator's projection have received attention. In 1805, Mollweide threw the earth's surface into an ellipse with the length of a meridian for its minor, and the circumference of the equator for its major axis. The central meridian is a straight line, all the others being elliptical. This has the advantage of having the parallels right lines and the areas on all parts of the map equivalent, but it grossly distorts all shapes.

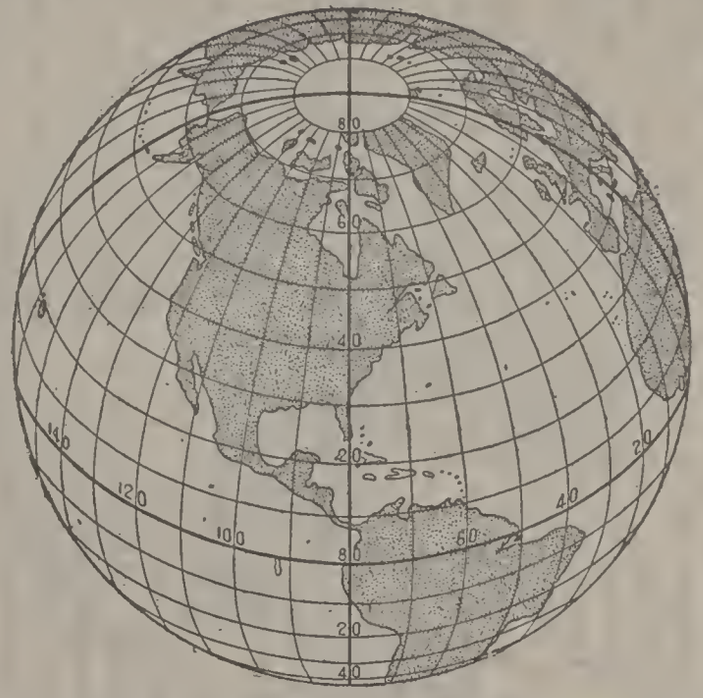
Mollweide's Map.

In 1898, Alphons van der Grinten proposed a mean between Mollweide and Mercator by representing the entire surface of the earth in a single circle, reducing to a minimum the distortion of angles by Mollweide and of areas and distances by Mercator. The errors are at a minimum at the equator and at a maximum at the poles, so that the continents are within the zone of least alteration. Any meridian may be chosen for the centre; if that of America is taken the central meridian may be made only half as long as the equator, giving the map the shape of a figure 8.

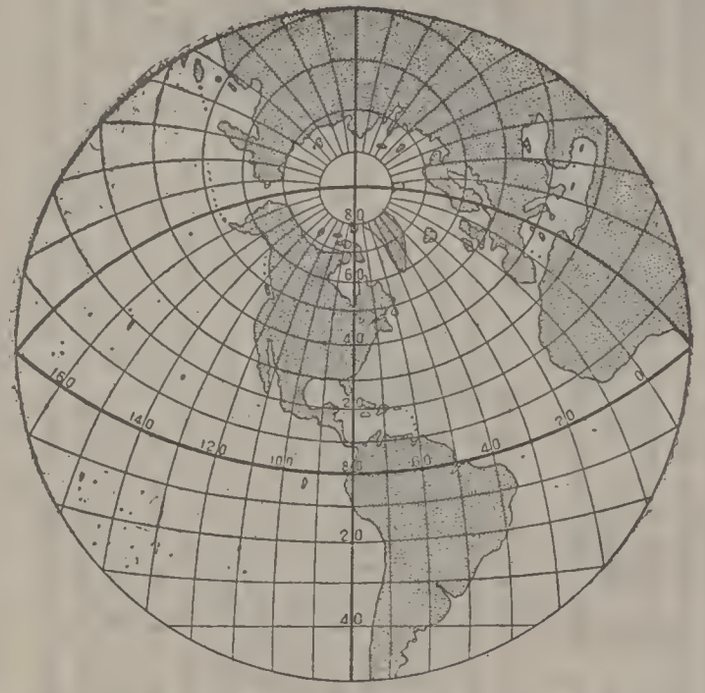
Van Der Grinten's Map.

Orthographic projection assumes that the eye is placed at an infinite distance, so that all lines leading from it to the object are parallel. This represents the central portions faithfully, but in the outer portions the areas are diminished.

Stereographic projection assumes that the eye is placed at a point in the opposite surface of the sphere, the line of sight being prolonged until it intersects the plane of projection tangent to the hemisphere. This enlarges the central portion of the map relative to the corresponding



Orthographic Projection on the Plane of a Horizon.



Stereographic Projection on the Plane of a Horizon.

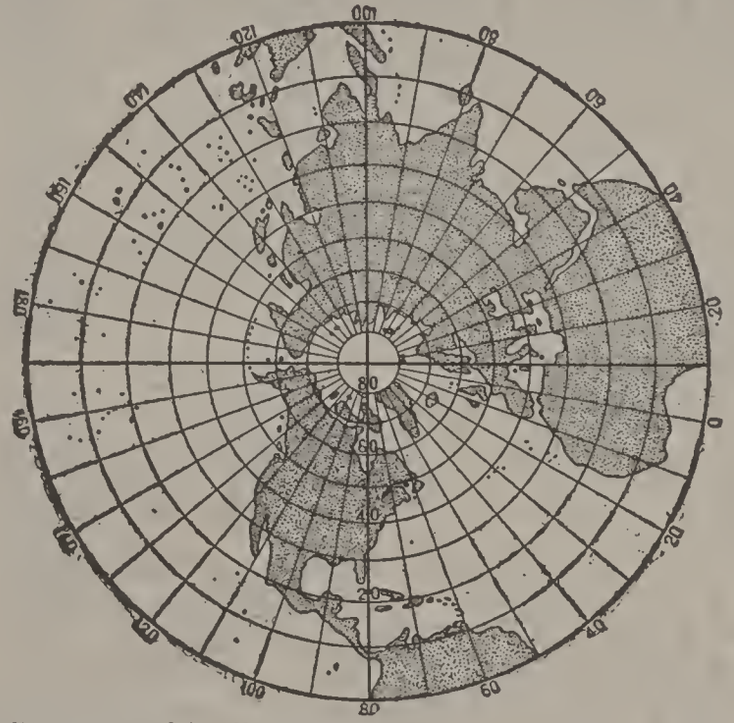
surface of the globe, and in the outer zones the surfaces are larger than on the globes.

Globular or equidistant projection, a modification of the last two, used frequently by the U. S. weather bureau, supposes the eye to be placed in the sphere at a distance $\frac{1}{52}$ times the radius above the surface, and the plane of projection is perpendicular to the diameter. All circles become ellipses, and though objects do not preserve their true outlines, their relative dimensions are maintained.

Conical projection assumes that a line is drawn tangent to the mean parallel of the region to be mapped, or, more accurately, secant, cutting the sphere at the two extreme parallels. This exaggerates the lengths of parallels toward the northern or the southern limits, but with modifications, under the name *Bonne's projection*, it was adopted in 1803 for the map of France and is used for the Ordnance Survey maps of Scotland, and for the maps in most atlases, though in countries of great longitude, the intersections of meridians and parallels become very oblique, as often seen in maps of Asia. For Africa, Oceanica and South America, another modification, known as *Flamsteed's projection*, is used, the parallels drawn as straight lines and the proper degree lengths drawn on each.

Topographical maps show elevations and valleys. This requires a third dimension, which is actually given in great exaggeration in relief maps. On a plane surface elevations are shown either by the hachure process, where bird's-eye pictures of the region are given, still with great exaggeration, or by the contour process, in which connected lines are drawn through all points of the same elevation. This method permits accuracy, and is used in the maps of the United States Geological Survey.

In early maps no blank space was wasted, something being inserted to fill up, however unimportant, and names being so many and in such uniformly fine print as to be a strain upon the eye. Modern map making is marked by these features: (1) Simplicity, the immediate purpose of the map not being obscured by the attempt to add collateral information; thus a series of political maps should not be colored to show climate or industries. (2) Perspective. Only the most important names should be given, and these in type of different sizes, in proportion to importance, with names of water and mountain features in italic. (3) Uniform coloring. Rivers and lakes as well as season and oceans should be uniformly printed in blue, and railways in red. On world and continent maps the colonies of a country should be of the same color as the country itself, Great Britain and all British possessions being in red, for instance. The coloring should be soft and grateful to the eye, the staring reds and yellows of the old oil-coloring giving way to softer tints, carefully chosen for harmonious effect.



Stereographic Projection on the Plane of the Equator.

Stereographic Projection on the Plane of a Meridian.

The map being drawn and colored is engraved for printing. Formerly copper and steel were used, it being easy to hammer a portion of the plate flat and re-engrave when changes were needed. This process is still employed, but has been supplanted to a great extent by photo-engraving, either upon stone, for lithograph printing, or upon relief plates, for printing on ordinary presses. By three-color work a series of four relief plates will print not only water in blue and railways in red, but the various countries in a great variety of colors.

MAPES (or MAPUS, or MAP), WALTER: famous mediæval writer of Latin prose and verse: b. probably on the frontiers of Wales about 1143; d. probably not long after 1208. After studying at Paris, he was attached to the court of Henry II. of England. He acted for a time as one of the king's ambulant judges, and held various ecclesiastical posts. He represented his sovereign at the court of Louis VII. of France, and was a member of the Lateran Council at Rome 1179. In 1196, he became Archdeacon of Oxford, and is last heard of in 1208, within a year or two of which date he seems to have died. Of the rhymed Latin poems, attributed (but very doubtfully) to Mapes, the most notable is the Golias series (*Apocalypsis Goliæ, Predicatio, Confessio,* etc.), a powerful satire on the corruptions in the church and the vices of the clergy. It is into the mouth of his hero, Father Golias, a godless, wine-bibbing priest, that Mapes puts the famous verses, *Meum est propositum in taberna mori,* etc., which, regarded not as a scathing sarcasm, but as a jovial drinking-song, secured for Mapes the title of 'the Anacreon of the 12th century!' His prose, *De Nugis Curialium,* designed to show the shallowness of court life, branched out into a lengthy and most multifarious miscellany, comprising old-world legends, court gossip, contemporary history, and theological polemics. His works were written mostly in French. Probably his greatest achievement is his infusing purity and spiritual purpose into several of the Arthurian legends, which we have in a prose dress apparently due to Mapes: the stories of Lancelot, the Quest of the Holy Graal, and the death of Arthur. His story of the Graal shows a consummate skill which gives him rank among the greatest writers of England: it throws into the background the old paganism of this cycle of legends, and transforms the whole into a high spiritual allegory. The *Latin Poems* were edited by Wright, 1841; *De Nugis,* 1850, and *Quest of the Holy Graal* by Furnivall, 1864.

MAPIMI, *mâ-pē'mē:* desert tract, about 525 sq.m., in n. Mexico; stretching s. from the Rio Grande; including portions of the states of Chihuahua, Durango, and Coahuila.

MAPLE, n. *mā'pl,* or MAPLE-TREE [AS. *mapel-treo:* OE. *medle-tree*], (*Acer*): genus of exogenous trees of nat. ord. *Aceraceæ.* This order contains more than 60

species, natives of temperate parts of the n. hemisphere, and particularly numerous in N. America and n. India. They have opposite leaves without stipules, usually lobed or palmate. The flowers are in axillary corymbs or racemes, small, but abounding in honey, and very attractive to bees. The calyx is generally divided into five segments; the petals, when present, equal in number to the segments of the calyx, grow from the margin of a fleshy, hypogynous disk. The fruit is formed of two small winged nuts, each with one or two seeds. With few exceptions, the genus *Acer* includes the whole order.—The COMMON MAPLE (*A. campestre*), a small tree, is a native of many parts of Europe and Asia: the leaves are small, and usually five-lobed; the wood is compact, fine-grained, takes a high polish, and is much used by turners and for carved work. Several nearly allied species are found in s. Europe.—The STRIPED BARK MAPLE (*A. striatum*) of N. America, where it often forms great part of the undergrowth in woods, is remarkable for longitudinal black and white stripes on its bark; and its wood, which is very white, is used for inlaying in cabinet-work.—The GREATER MAPLE or SYCAMORE (*A. pseudo-platanus*), commonly called *Plane-tree* in Scotland, is a native of various parts of Europe: it attains a height of 70 to 90 ft., has a spreading umbrageous head, and large, palmate, coarsely serrated leaves on long stalks. It is of quick growth, and thrives near the sea, and in other exposed situations. The wood is white, compact, and firm; not hard, but capable of fine polish; and is used by wheelwrights, turners, etc. It is not apt to warp. Stair-rails are often made of it, and pattern-blocks for manufactories, as well as bowls, bread-plates, etc. Sugar is sometimes made from the sap of this tree, as from that of several other maples; but the species which yields it most abundantly is the SUGAR MAPLE (*A. saccharinum*) of N. America, a species which much resembles the sycamore, and abounds in the northern United States, and in the British Possessions, where large quantities of sugar are made from it for domestic use. The trunk of the Sugar Maple is generally more slender than that of the sycamore. To obtain sugar, holes are bored in the trunk when the sap is ascending, early in spring, before the winter frost has passed away, in an obliquely ascending direction, at no great distance from the ground, at first only to the depth of half an inch, afterward deepened to two inches; and the sap thus collected is evaporated in boilers over a brisk fire, to the consistency of syrup, strained and poured into molds, in which it crystallizes into a coarse gray or brown colored sugar. It is sometimes afterward refined to whiteness. Four gallons of sap yield about one pound of sugar. A single tree yields from two to six pounds in a season. During the sugar-making season, sheds are erected in the woods for the boiling and other processes of the

manufacture. The sap cannot be kept long after being collected. Good vinegar is made from it, and a kind of molasses much superior in its delicate flavor to that from the sugar-cane, and much used in America with buckwheat cakes, etc. The wood of the Sugar Maple has a satiny appearance, and is used for cabinet-making; it is sometimes finely marked with undulations of fibre, and is then known as *Bird's-eye Maple,* and is used for veneers. The cultivation of the Sugar Maple in Europe, for the sake of its sugar, has of late been advocated. It seems to require a dry and sheltered situation. See SUGAR (MAPLE SUGAR). *A. nigrum,* Black Sugar Maple, is but a variety.—The MOUNTAIN MAPLE (*A. spictatum*) of the northern states is a tall shrub.—The WHITE or SILVER MAPLE (*A. dasycarpum*) has deeply lobed leaves, silvery beneath, and is a favorite ornamental tree in the West.—The RED or SWAMP MAPLE (*A. rubrum*) has red twigs, and turns crimson in autumn, flooding the lowlands with color.

MAQUI, *măk'wē* (*Aristotelia Maqui*): only known species of a genus of plants sometimes referred to nat. ord. *Tiliaceæ,* and which has also been made the type of a proposed order. It is an evergreen or sub-evergreen shrub, of considerable size, native of Chili. The flowers are small, green, and yellow, in axillary racemes of no great beauty. The fruit is a three-celled berry, about the size of a pea, black, acid, and eatable; the Chilians make a wine from it. The wood is used for making musical instruments, and the tough bark for their strings. The maqui is cultivated in more northern countries as an ornamental shrub.

MAR, v. *mâr* [probably derived from the figure of a person twisting his mouth or making ugly faces, and so temporarily disfiguring his face; Swab. *marren,* to growl angrily, as a dog: OF. *marrir,* to complain; Ger. *schmarre,* a slash, a scar: comp. Gael. *marr,* to obstruct, to hinder]: to injure; to blot; to spoil; to disfigure; to damage. MAR'RING, imp. MARRED, pp. *mârd. Note.*—Skeat agrees with the suggested Gael. etymon in referring MAR, in the primary sense of 'to retard, to obstruct,' to O.Dut. *merren,* to stay, to retard; Dut. *marren,* to tarry; and again, in the senses of 'to dissipate, to lose, to spoil,' he refers to O.H.G. *maro,* tender; Icel. *merja,* 'to bruise, to pound.'

MARABOU' FEATHERS. See ADJUTANT.—*Marabou Stork* is the African name for Adjutant (q.v.).

MARABOUTS, or MARABUTS, n. plu. *măr'ă-bôtz* [corruption of Arab. *morábit,* hermit or devotee, from *ribát,* fortified frontier post]: among *North Africans,* descendants of the *Moravides* (Arab. frontier inhabitants), Arabic tribe, which founded a dynasty in n.w. Africa 1075, and held Morocco and Spain for a considerable period (see ALMORAVIDES). The Almohads arose as a

sect among them, and put an end to their temporal dominion; but their descendants exercise to this day a spiritual authority over the Moslem negroes in Barbary, the coast of Guinea, etc. They form a kind of priestly order, officiating at mosques and chapels, explaining the Koran, providing the faithful with amulets, prophesying, and working miracles. They are looked up to with great awe and reverence by the populace, who also allow them a certain vague license over their goods and chattels—their wives not excluded. The Great Marabout ranks next to the king, and the dignity of a Marabout is generally hereditary. One of the most eminent Marabouts of our day was the late Abd-el-Kader (q.v.). The name Marabouts arose thus: pious Moslems early became soldiers against the unbelievers, and were often stationed at frontier military posts, where they spent their leisure in devotion and gained repute for holiness.

MARACAIBO, *mâ-râ-kī'bō:* fortified city of the S. American republic of Venezuela, 25 m. from the sea, on a sandy plain on the w. shore of the strait which connects the Lake of Maracaibo with the Gulf of Maracaibo; lat. 10° 45′ n., long. 71° 40′ w. It is the chief town of the state of Zulia (formerly called Maracaibo, 33,075 sq.m.; pop. about 90,000; comprising the territory surrounding the Lake of Maracaibo). It is a handsome town, with a hot but healthful climate, and has a harbor deep enough for the largest vessels, but inaccessible to those drawing more than 10 or 11 ft. because of the shifting bar at its mouth. The Red 'D' Line Steamship Company, of New York, sends a vessel on regular trips to Maracaibo, and hundreds of small craft, suitable for shallow waters, carry on the trade of the coast and rivers tributary to the lake. This city is also the starting point for passenger and freight steamers and the railway lines of sections of the state of Los Andes. The most important buildings are the executive mansion, the public market, legislative palace, municipal building, Baralt theatre, university, six churches, and the new jail. There are 5 hotels, 2 clubs, 24 restaurants, etc. The public plazas contain statues of the patriot, Gen. Rafael Urdaneta, and Don Rafael Baralt, author of a history of Venezuela, who was born in Maracaibo and became a member of the Royal Spanish Academy. There is a dockyard for the construction of sailing-vessels, and the city has electric lighting, telegraph and telephone service, submarine cable, street railways, etc. Its annual exports are approximately as follows: coffee, 25,626,000 kilos; cocoa, 154,000 kilos; hides, 456,000 kilos; deer and goat skins, 147 tons; copaiba, 41 tons; fustic, 6,272 tons; dividivi, 3,368 tons; brown sugar, 283 tons; fish sounds, 36 tons. The number of vessels entering this port during the year just mentioned is about 450. Maracaibo, at first called Nueva Zamora, was founded in 1571 by Alonzo de Pacheco. The population numbers more than 35,000.

MARACAIBO, Lake and Gulf: in the n. of Venezuela, communicating with the Caribbean Sea. The *Lake* is about 100 m. in length, 70 m. in breadth; of considerable depth, but the bar at its mouth prohibits the entrance of large vessels. It is connected with the Gulf of Maracaibo by a strait more than 20 m. in length, and 5 to 10 m. in breadth, which is a wide inlet of the Caribbean Sea, 150 m. from e. to w., and about 75 m. from n. to south.

MARACAN, n. *mâr'ă-kăn:* a species of parrot in Brazil.

MARAGHA, *mâ'râ-gâ:* old town of Persia, province of Azerbijan, 50 m. s. of Tabriz, on a tributary of Lake Urumiah. It is surrounded by walls, and was long the cap. of the province. It contains two bridges of the 11th c., and the remains of the observatory of the celebrated mediæval astronomer, Nasir Eddin. Pop. 15,000.

MARAI, n. *mă-rā':* in the *Pacific Islands*, a sacred inclosure or temple.

MARAJAH, n. *mâ-râ'jă*, improper spelling of Maharajah, n. *mâ'hâ-râ'jă:* a Hindu sovereign prince. See Maharajah.

MARAJO, *mâ-râ-zhō'*, called sometimes Island of Joannes, *zhō-ân'nēs:* island off the n.e. coast of Brazil, belonging to the province of Para; between the estuaries of the rivers Amazon and Para; 180 m. in length by 125 m. in breadth. In the n.e. it is somewhat elevated, without trees, and covered by herds of cattle. The w. portion is low, and watered by numerous streams. Pop. estimated 20,000.

MARANATHA, n. *măr'ă-nā'thă* [Syr.]: Grecized form of the Aramaic words meaning 'The Lord has come,' or 'The Lord will come;' see I Cor. xvi. 22, where it follows the 'Anathema,' but is not necessarily connected with it in one sentence.

MARANHAM', *mâ-rân-yân*, or Maranhão: Brazil, a maritime state, bounded on the north by the Atlantic Ocean; area, 177,566 square miles. The surface is uneven, but there is no range of mountains. There are numerous rivers flowing into the Atlantic, large forests, extensive plains where cattle are reared; the climate is fine, and the soil fertile. Paranahyba is the principal river. Agriculture, however, has not prospered here, and the emancipation of the slaves, on whose labor the state had depended, was followed by a period of great depression. Cotton, sugar, and rubber are the principal products. Coffee, rice, corn, cacao, and tropical fruits grow luxuriantly. The population is not great enough to properly develop the rich natural resources. Efforts are being made to colonize different sections. The present inhabitants are chiefly of Portuguese descent; but there are about 20,000 Indians and a few hundred negroes and mulattoes. The capital is Maranham. Pop. (1900) 450,762.

MARANHAM, or São Luiz De Maranhão, *sân lô-ēzh' dō mâ-rân-yân:* Brazil, capital of the state of Maranham;

on an island on the bay of São Marcos, and between the mouths of the Itapicurú and Mearim rivers. The first settlements were made by the French in 1612. The ground is low and the climate warm, but the place is healthful. The harbor, once good, is filling with sand, and little or nothing is done for its improvement. It has considerable trade; the chief exports are cotton, sugar, hides, rubber, cotton-seed, and the skins of goats. The chief imports are cloths and clothing. The city has many fine buildings, public and private. Pop., including the suburbs, about 40,000.

MARANON (river). See AMAZON.

MARANTACEÆ, n. plu. *măr'ăn-tā'sē-ē* [after *Maranti*, a Venetian physician, died 1554], called also CANNACEÆ: natural order of endogenous plants, containing much starch in thin rhizomes and roots; they are nearly allied to *Scitaminœ* (q.v.), and differ chiefly in having all the stamens petal-like, and the one fertile stamen lateral. They are of the arrow-root family, destitute of the aromatic property general in the *Scitamineœ*. There are about 160 known species, all tropical or subtropical herbaceous perennials. Not many of them are large or notable for beauty of flowers. The tuberous root-stocks of many abound in starch. MARANTA, n. *măr-ăn'tă*, genus of interesting plants, comprising greenhouse species; *Maran'ta arun'dinăcĕă*, also *M. indĭca*, are species which produce the best arrow-root.

MARASCHINO, n. *măr'ăs-kē'nō* [It. *maraschino*—from *marasca*, a cherry, F. *marasquin*]: spirit or liqueur made from the *marasca cherry* of Dalmatia. See LIQUEUR.

MARASH, *mâ-râsh':* pashalic of Asiatic Turkey; lat. 36° 3′—38° 30′ n., long. 36°—38° 40′ e.; bounded n. by the pashalic of Sivas, e. by Diaubekis, s. by Aleppo, w. by Karamania; greatest length 130 m., width 105 m.; cap. Marash. The pashalic is traversed from w. to e. by the main chain of the Taurus Mountains, and drained in the e. by the Euphrates river, and the centre and s.w. by the Jyhoon. The valleys of these rivers are fertile and afford fine pasturage, but the remainder of the pashalic is mountainous and timbered. Marash, the cap., is picturesquely situated on a slope of the lofty Aghr Tagh, above the Jyhoon river, 90 m. n.w. of Aleppo, and contains 3,000 to 4,000 wood and clay buildings. Pop. of pashalic 248,000.

MARASMUS, n. *mă-răz'mŭs* [Gr. *marasmos*, decay, weakness]: vague term denoting general emaciation or atrophy with no special cause apparent; now used in relation to the washing of infants.

MARAT, *mâ-râ*, JEAN PAUL: one of the infamous characters of the French Revolution: 1743, May 24—1793, July 13; b. Baudry, in Neufchâtel, of Prot. parentage. He practiced medicine in Paris and London; spent some time in Dublin; taught languages in Edinburgh;

and, 1775, got the degree M.D. from St. Andrews on the recommendation of the Edinburgh doctors. He published works on optics, fire, electricity, and on medical subjects, some of them in English, and gained considerable scientific repute. Returning to Paris, he practiced medicine, and was in great demand among the higher classes. The revolution brought him into political prominence. His appearance was grotesque, his look wild, and his speeches extravagant. He was unpopular in the assembly, but his influence over the lowest classes soon became great. He issued a journal, *Publiciste Parisien,* afterward called *Ami du Peuple,* which is historically connected with some of the most fearful events of that period. No falsehood was too monstrous to be published in it, no atrocity too great to be recommended. It has been generally believed that the influence of Marat led to the cruelties and massacres of 1792, Sep.; this has been denied by a few writers. At this period Marat was elected a member of the Convention, but his appearance there was met with almost universal expressions of abhorrence. No one would sit beside him; when he attempted to speak, a tumult always arose. His journal, now the *Journal de la République,* became more ferocious and sanguinary than ever. He demanded the sacrifice of 270,000 heads, and defended this in the Convention, saying that, if these were not granted, he would demand more. During the king's trial, he was urgent for his immediate execution, and in his journal called upon the people to slay 200,000 of the adherents of the old régime, and to reduce the Convention to one-fourth. In 1793, Apr., Marat obtained the enactment of the fearful law against suspected persons, in virtue of which 400,000 were imprisoned. Robespierre, Danton, and Marat were now the triumvirate which ruled France. Marat had contracted a horrible skin disease which would soon have ended his life; but he was stabbed in his own house by Charlotte Corday (q.v.). This event was followed by some of the most horrible atrocities of the Reign of Terror; streams of blood flowing, as was said, to the manes of Marat, whose likeness, with gaping wounds, painted by David, was exhibited on an altar in the court of the Louvre, and then hung up in the Convention; while it was decreed that his housekeeper, whom he had married 'one fine day, in the presence of the Sun,' should be maintained at the expense of the state. A decree 1793, Nov. 4, gave to Marat's remains the honors of the Pantheon; but they were cast out of it again 1795, Nov. 8, and his picture was removed from its place in the Convention. See Bougeart's *Marat, L'Ami du Peuple;* Chevremont's *Marat* (1881).

MARATHI, n. *ma-râth'ī* [native name]: language spoken by the Mahrattas (q.v.); called also Mahratta.

MARATHON, *măr'a-thŏn:* anciently, a village on the e. coast of Attica, about 20 m. n.e. of Athens; now called

Marathona, or, according to Leake, the present **Vrana.** It was in the plain of Marathon, about six m. in length and three in breadth, with a background of mountains in the w., and a marsh on the n. and s.; eastward, it reached the sea. Byron's lines in the *Isles of Greece* correctly describe it:

> The mountains look on Marathon—
> And Marathon looks on the sea.

Marathon is gloriously memorable as the scene of the grand defeat of the Persian hordes of Darius by the Greeks under Miltiades, B.C. 490. The Persians, numbering about 110,000, under the command of Datis and Artaphernes, had crossed the Ægean Sea and taken Eretria in Eubœa. Thence they crossed into Attica, where, on the plain of Marathon, they were met by the Athenian army of about 10,000 heavy-armed soldiers, reinforced by 1,000 Bœotians. The Greeks occupied the high ground in front of the Persians, who filled the plain toward the sea. Miltiades' plan was to attack the latter without delay. He, therefore, boldly charged down upon them. His right and left wings drove the Persians toward the sea and the marshes. But his centre was repelled. Thereupon he recalled both victorious wings and massed them against the enemy's centre, which could not withstand the combined attack. The whole Persian host was now fleeing toward the sea, where their fleet lay anchored. The Greeks followed so closely that they succeeded in burning seven of these vessels on the shore; but the rest escaped with the routed Persian army. The Persians lost 6,400 men in this battle, while the loss of the Greeks was only 192 men, whose probable burial-place is marked to the present day by a tumulus, near the modern village of Vrana, on the site of the ancient village of Marathon. The battle was one of the great decisive conflicts in the world's history. It saved Greece from Persian rule, and Europe from Asiatic dominion and the oriental type of civilization.

MARAUD, v. *mă-rawd'* [F. *maraud,* a rogue, a vagabond, a tom-cat—an animal notorious for its prowling habits; *marauder,* to play the rogue, to beg: Sp. *marrar,* to deviate from truth]: to rove in quest of plunder; to plunder. MARAUD'ING, imp.: ADJ. roving in search of plunder: N. acting as a marauder. MARAUD'ED, pp. MARAUD'ER, n. *-ėr,* a freebooter; a plunderer; in *military affairs,* one who engages in irregular plunder or offers violence to the peaceable inhabitants of a country. In all armies where discipline is maintained, marauding is, at least professedly, punished by death; the provost-marshal having power to inflict that penalty summarily on all offenders taken in the act.

MARAVEDI, n. *măr'ă-vā'dĭ* [Sp.]: old Spanish coin, either of vellon, worth about two-sevenths of a farthing; or of silver, worth five-sevenths of a farthing.

OCT 21 1911

One copy del. to Cat. Div.

OCT 21 1911

LIBRARY OF CONGRESS
0 033 261 307 8